3404

WASTE ACCEPTANCE CRITERIA ATTAINMENT REPORT FOR AREA 3A MISCELLANEOUS STOCKPILES

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
FERNALD, OHIO

DECEMBER 2000

U.S. DEPARTMENT OF ENERGY
FERNALD AREA OFFICE

20200-RP-0006
REVISION A
DRAFT

000001

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ACRONYMS AND ABBREVIATIONS

ASL	analytical support level
ccpm	corrected counts per minute
CLP	Contract Laboratory Program
COC	constituent of concern
CRDL	Contract Required Detection Limits
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
HPGe	high-purity germanium (detector)
µg/kg	micrograms per kilogram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
OEPA	Ohio Environmental Protection Agency
OSDF	On-Site Disposal Facility
OU5	Operable Unit 5
pCi/g	picoCuries per gram
PID	photoionization detector
ppm	parts per million
PSP	Project Specific Plan
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
SEP	Sitewide Excavation Plan
SVOC	semi-volatile organic compound
TCLP	toxicity characteristic leaching procedure
V/FCN	Variance/Field Change Notice
VOC	volatile organic compound
WAC	waste acceptance criteria
WAO	Waste Acceptance Organization

1.0 INTRODUCTION AND SCOPE

This report summarizes the analytical results from sampling three miscellaneous stockpiles in Remediation Area 3A: Stockpiles HIS-008, A3A-006, and BPW-005, shown in Figure 1-1. Soil sampling was conducted in July 2000 to evaluate attainment of the On-Site Disposal Facility (OSDF) waste acceptance criteria (WAC, DOE 1998). Debris WAC attainment will be visually verified during excavation by personnel from the Waste Acceptance Organization (WAO).

Upon verbal approval from the U.S. Department of Energy (DOE), U.S. Environmental Protection Agency (EPA), and Ohio Environmental Protection Agency (OEPA), Stockpile A3A-006 was excavated in August 2000. Stockpiles HIS-008 and BPW-005 are scheduled to be excavated in Spring 2001, following formal approval of this WAC Attainment Report.

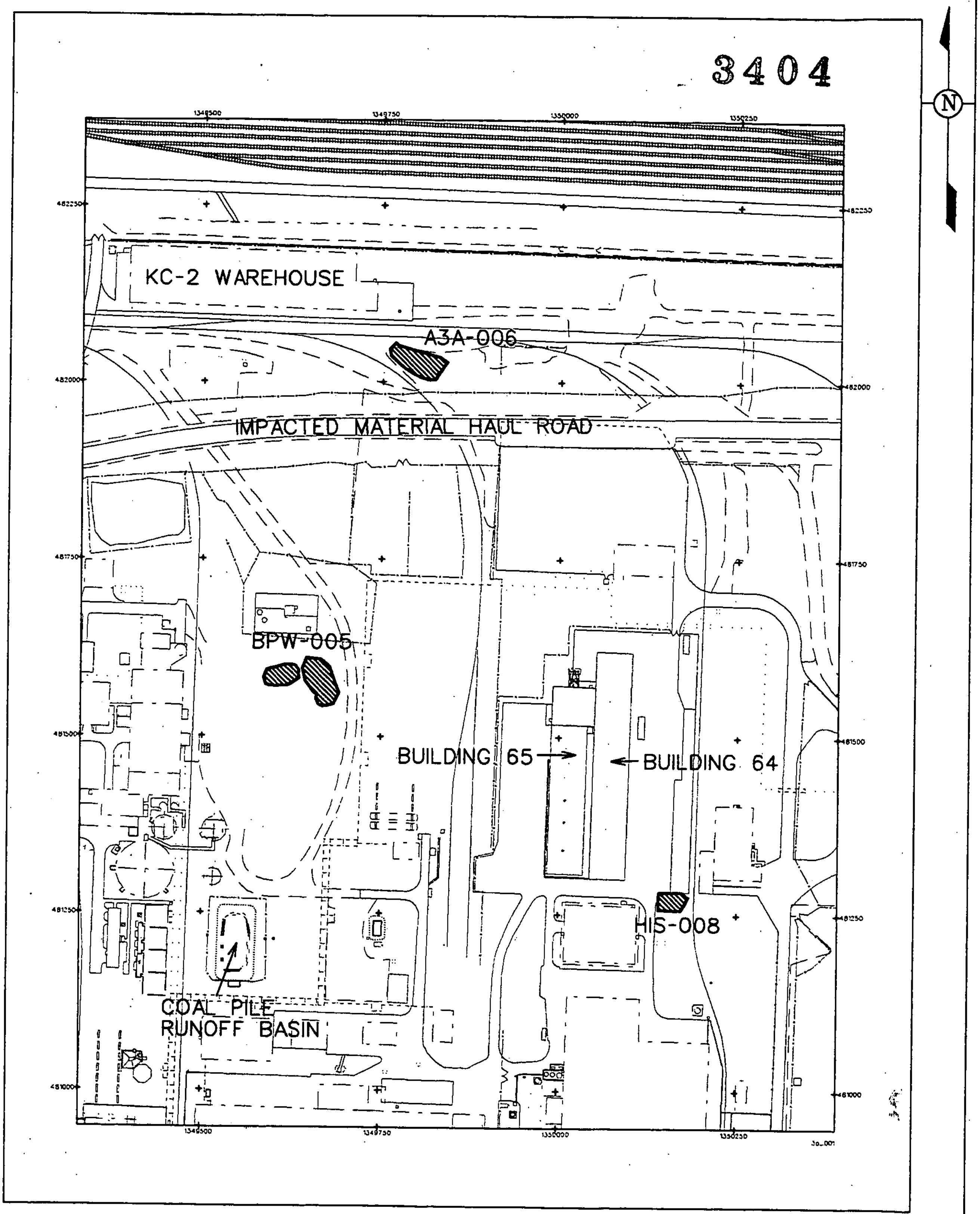
Although summaries of the strategies and methods of sampling these stockpiles are included in this report, the Project Specific Plan (PSP) for Sampling Area 3A Miscellaneous Stockpiles (DOE 2000) should be directly referenced to for the complete background and/or specific details on a given aspect of the WAC attainment data. The PSP and associated Variance/Field Change Notices (V/FCNs) are included as Appendix A to this report.

v:\50j31\dgn\bmp\3a_001.dgn

STATE PLANAR COORDINATE SYSTEM 1983

01-DEC-2000

3404



LEGEND:

STOCKPILE

SCALE

200 100 0 200 FEET

DRAFT

FIGURE 1-1. LOCATIONS OF AREA 3A MISCELLANEOUS STOCKPILES

2.0 STOCKPILE DESCRIPTIONS AND SAMPLING DESIGN

2.1 STOCKPILE DESCRIPTIONS

Figure 1-1 shows the location of the three Area 3A miscellaneous stockpiles.

Stockpile HIS-008 is located southeast of Building 64 and consists of approximately 72 cubic yards of soil and debris. Stockpile A3A-006 is located southeast of the former KC-2 Warehouse and north of the Impacted Material Haul Road. It consists of approximately 210 cubic yards of soil and gravel. The origin of these stockpiles is not known and there are no associated historical data.

Stockpile BPW-005 is located in the northern portion of the old Coal Pile area and consists of approximately 460 cubic yards of coal, soil, gravel and concrete pieces. This pile was created in 1998 from material generated during the decontamination and dismantlement of the Boiler Plant and from dredging the Coal Pile runoff basin.

2.2 REAL-TIME SCANNING

A real-time, total uranium surface scan of each stockpile was performed using the portable high-purity germanium (HPGe) detector system. In each case, the HPGe measurements covered as much of the stockpile surface as was practical without jeopardizing worker safety.

The HPGe measurements were taken with a spectral acquisition time set to 300 seconds (5 minutes). The detector height was set at 1 meter above the ground surface. A Global Positioning System was used to obtain position information for each measurement. The HPGe measurements were moisture corrected. A default moisture value of 20 percent was used because the high gravel content of the stockpiles prevented use of the infrared moisture meter. All the HPGe results were well below the 928 milligrams per kilogram (mg/kg) total uranium trigger level requiring confirmation and subsequent delineation measurements. The results of the HPGe measurements are presented in Table 2-1, and the HPGe coverage for each stockpile is shown on Figures 2-1 through 2-3. The apparent discrepancy in the HPGe coverage at the southern boundary of Stockpile A3A-006 shown on Figure 2-2 is due to the fact that, in the field, the boundary of the pile could not be clearly delineated from the surrounding landscape. The shape of the stockpile was drawn at what appeared to be the ground surface based on surveying contours. However, those boundaries were not distinctly identifiable in the field. The HPGe operators used their best professional judgement when determining the extent of the stockpile and feel confident that the entire surface of the stockpile was scanned.

2.3 PHYSICAL SAMPLING

In accordance with the Sitewide Excavation Plan (SEP, DOE 1998a) and OSDF WAC Attainment Plan, the number of samples required to adequately characterize Stockpiles HIS-008, A3A-006, and BPW-005 was determined based on the current data set, the Operable Unit 5 (OU5) Remedial Investigation/Feasibility Study (RI/FS) sampling density in the Former Production Area, process knowledge of the stockpiles, and sampling density in previous soil stockpile sampling projects. Based on these requirements, three samples each were collected from Stockpiles HIS-008 and A3A-006, and four samples from Stockpile BPW-005. All samples were analyzed for the stockpile-specific constituents of concern (COC) presented in Table 2-2.

Sample locations and depths are based on both a combination of systematic grid/random approach and biased sampling at the random boring locations. A systematic approach was used to establish a sample grid over the stockpile surface. The grid pattern was based on surface area and consists of three grid blocks on HIS-008 and A3A-006, and four grid blocks on BPW-005, of approximately equal size. A primary random sample location (northing and easting coordinate) and depth interval was selected within each block as shown on Figures 2-4 through 2-6.

Biased samples were to be collected based on readings from a beta/gamma (Geiger-Mueller) survey meter and a photoionization detector (PID). Six-inch soil intervals with beta/gamma readings above 450 corrected counts per minute (ccpm) were to be collected and analyzed for total uranium. However, since no beta/gamma readings exceeded 450 ccpm for these stockpiles, no biased radiological samples were collected. Six-inch intervals with above-background PID readings were subjected to a headspace analysis. If the result of the headspace analysis was above 10 parts per million (ppm), the 6-inch sample interval was submitted for total volatile organic compound (VOC) analysis. One biased sample for Stockpile A3A-006 was collected and analyzed based on the headspace criteria. The analytical results from this biased sample showed no WAC COCs above the detection level.

Soil cores were collected using either a hand auger or the Geoprobe® Model 5400. All borings were completed to 1 foot below the base of each stockpile and screened with the beta/gamma and PID instruments.

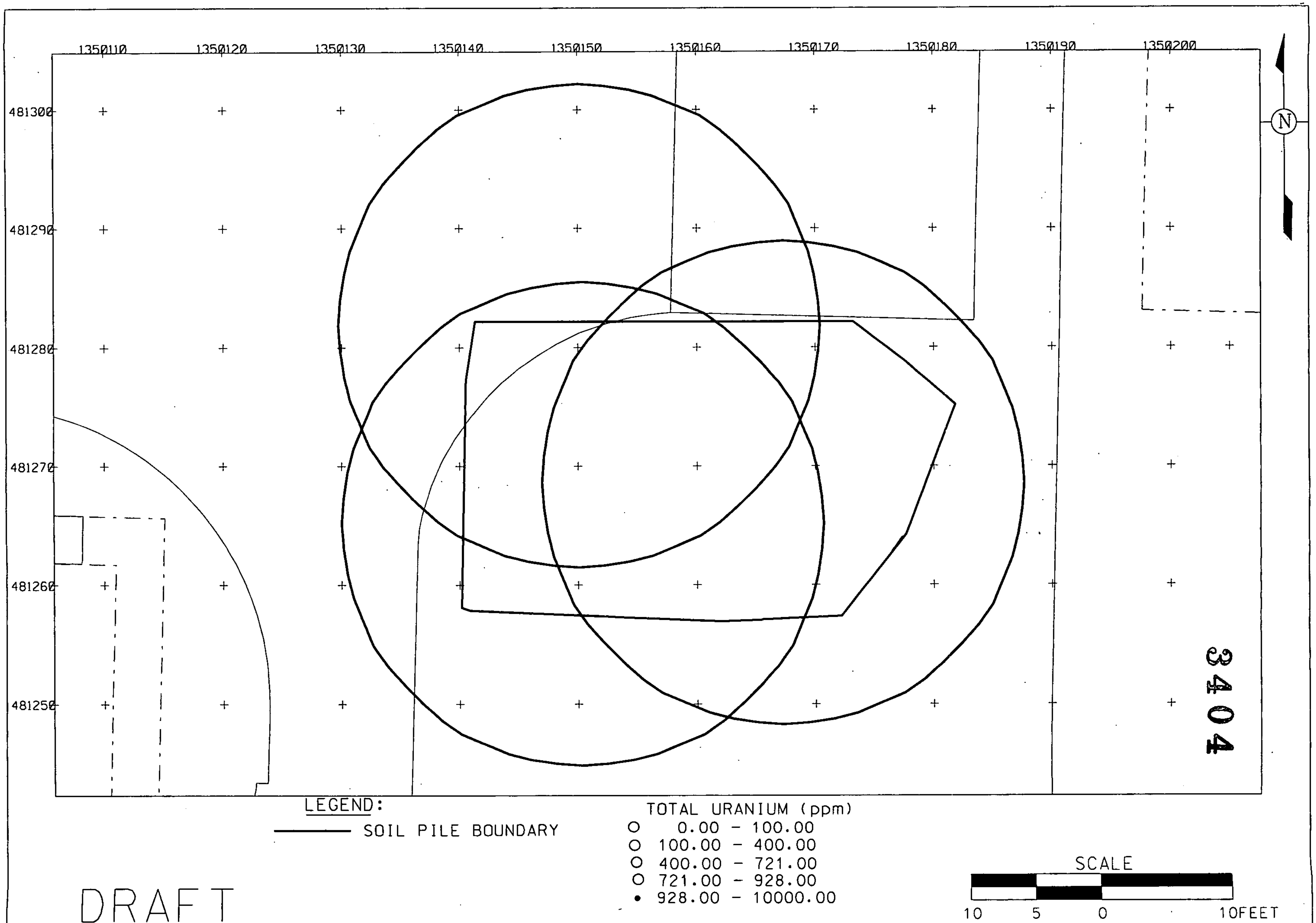
TABLE 2-1
SUMMARY OF HPGe TOTAL URANIUM REAL-TIME SCANNING RESULTS

Location ID	Date	Results (mg/kg)
A3A-006 (surface)		
A3A-006-1-G	06-Jun-00	44.1
A3A-006-2-G	06-Jun-00	32.6
A3A-006-3-G	06-Jun-00	35.6
A3A-006-4-G	06-Jun-00	23.5
A3A-006-5-G	06-Jun-00	27.3
HIS-008		
HIS-008-1-G	08-Jun-00	86
HIS-008-2-G	08-Jun-00	less than 55.8 mg/kg
HIS-008-3-G	12-Jul-00	92.8
BPW-005		
BPW-005-1-G	01-Jun-00	52.4
BPW-005-2-G	01-Jun-00	32.7
BPW-005-3-G	01-Jun-00	47.1
BPW-005-4-G	01-Jun-00	45
BPW-005-5-G	01-Jun-00	31.8
BPW-005-6-G	01-Jun-00	30.1
BPW-005-7-G	01-Jun-00	33.6
BPW-005-8-G	01-Jun-00	40.7
BPW-005-9-G	01-Jun-00	less than 16.4 mg/kg
BPW-005-10-G	28-Jul-00	44.6
BPW-005-10-G-D	28-Jul-00	40.8

TABLE 2-2
STOCKPILE-SPECIFIC CONSTITUENTS OF CONCERN

HIS-008	A3A-006	BPW-005
Total Uranium	Total Uranium	Total Uranium
Technetium-99	Technetium-99	Technetium-99
Bromodichloromethane	Bromodichloromethane	
Cloroethane	Cloroethane	
1,1-Dichloroethene	1,1-Dichloroethene	
1,2-Dichloroethene	1,2-Dichloroethene	
Tetrachloroethene	Tetrachloroethene	
Trichloroethene	Trichloroethene	
Vinyl Chloride	Vinyl Chloride	
Alpha-chlordane	Alpha-chlordane	
Toxaphene	Toxaphene	
Carbazole	Carbazole	
4-Nitroaniline	4-Nitroaniline	
Bis(2-chloroisopropyl)ether	Bis(2-chloroisopropyl)ether	
TCLP	TCLP	

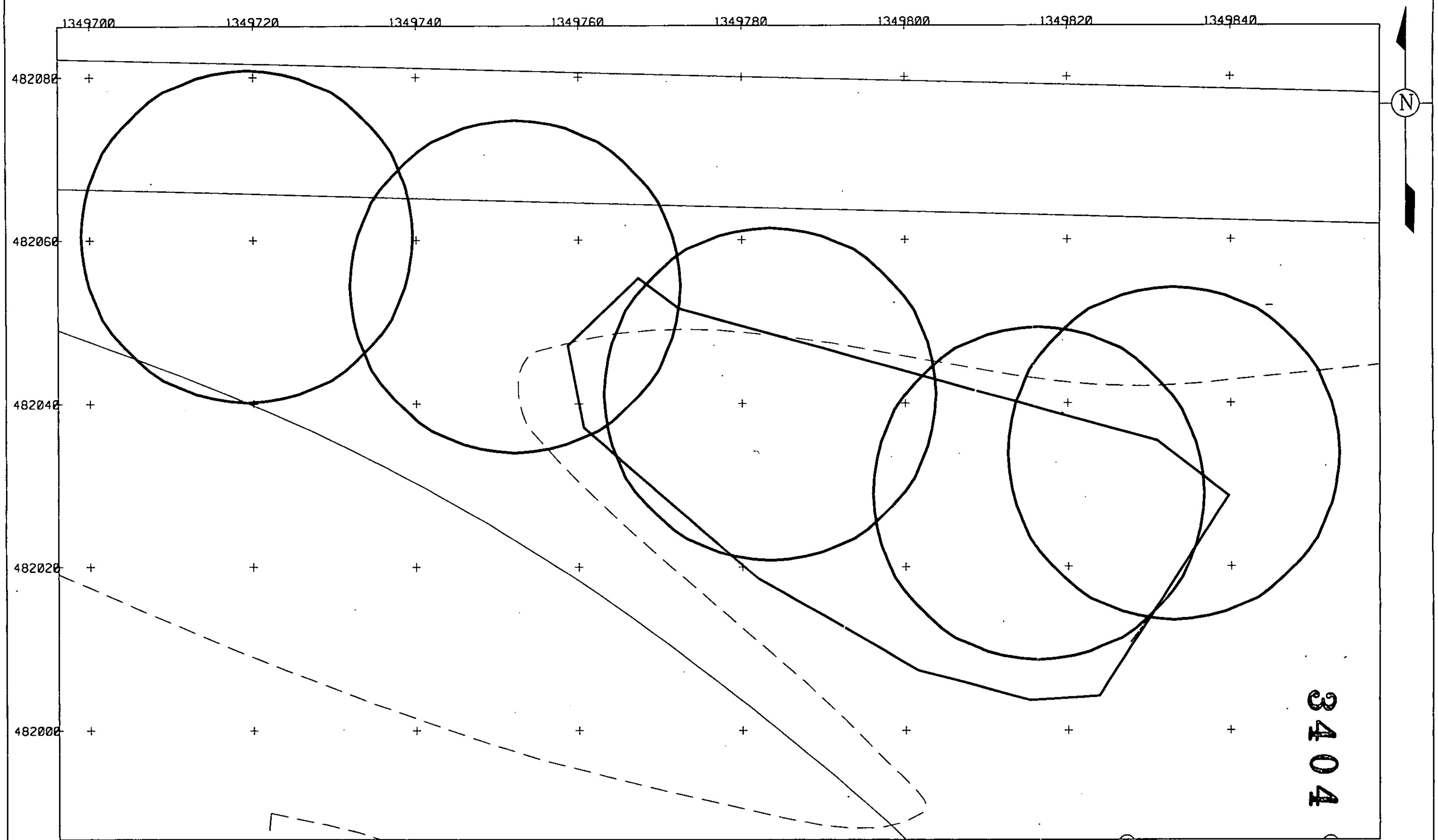
TCLP - toxicity characteristic leaching procedure



v:*5cj31*dgn*bmp*3a_008.dgn
STATE PLANAR COORDINATE SYSTEM 1983

FIGURE 2-1. STOCKPILE HIS-008 REAL-TIME SCANNING COVERAGE 01-DEC-2000

000012



LEGEND:

— SOIL PILE BOUNDARY

TOTAL URANIUM (ppm)

○ 0.00 - 100.00
○ 100.00 - 400.00
○ 400.00 - 721.00
○ 721.00 - 928.00
● 928.00 - 10000.00

SCALE

15 7.5 0 15 FEET

DRAFT

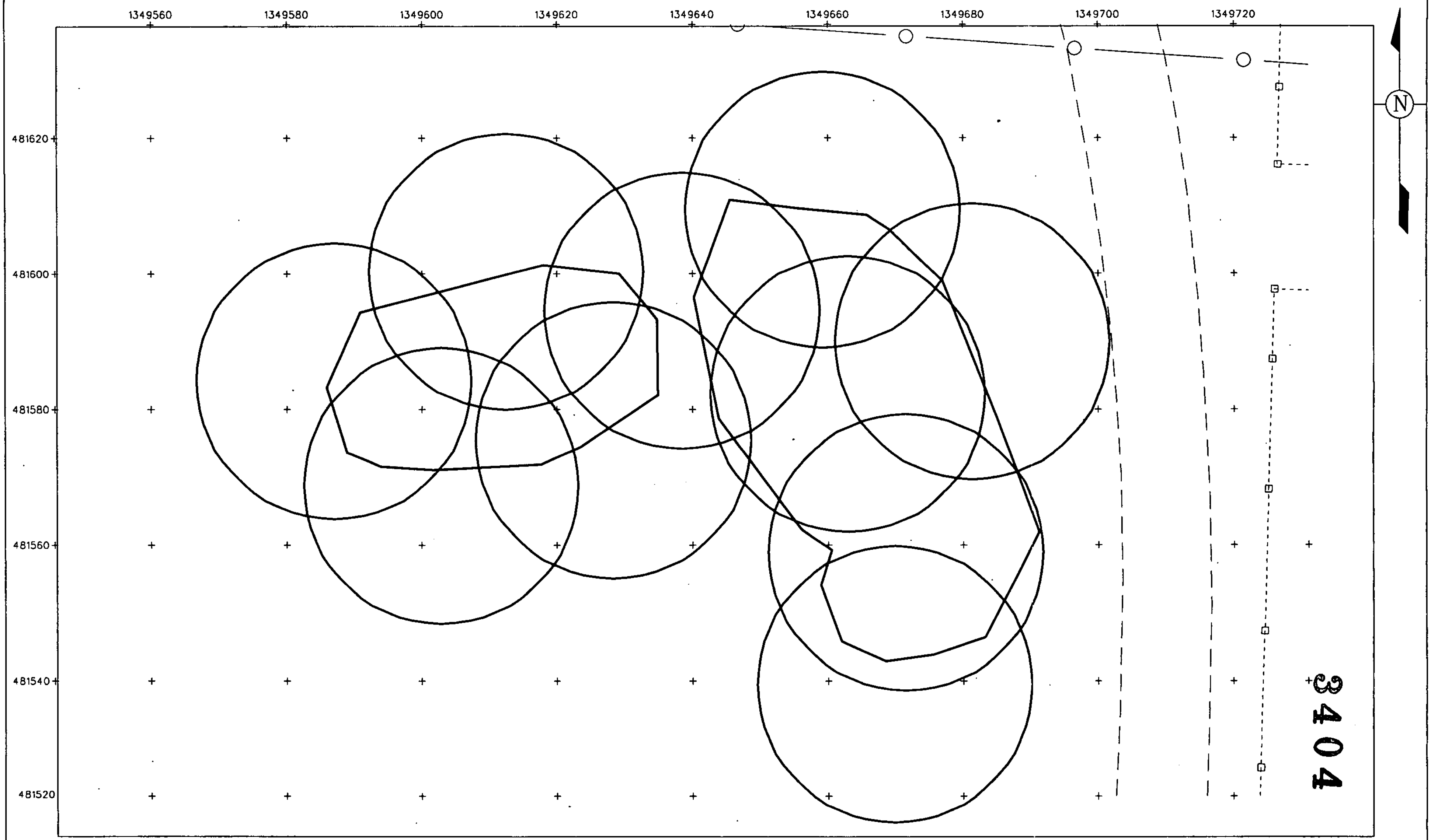
3404

000013

v:*5cj31*dgn*bmp*3a_009.dgn
STATE PLANAR COORDINATE SYSTEM 1983

FIGURE 2-2. STOCKPILE A3A-006 REAL-TIME SCANNING COVERAGE

01-DEC-2000



LEGEND:

SOIL PILE BOUNDARY

TOTAL URANIUM (ppm)
- 0.00 - 100.00
- 100.00 - 400.00
- 400.00 - 721.00
- 721.00 - 928.00
- 928.00 - 10000.00

SCALE
20 10 0 20 FEET

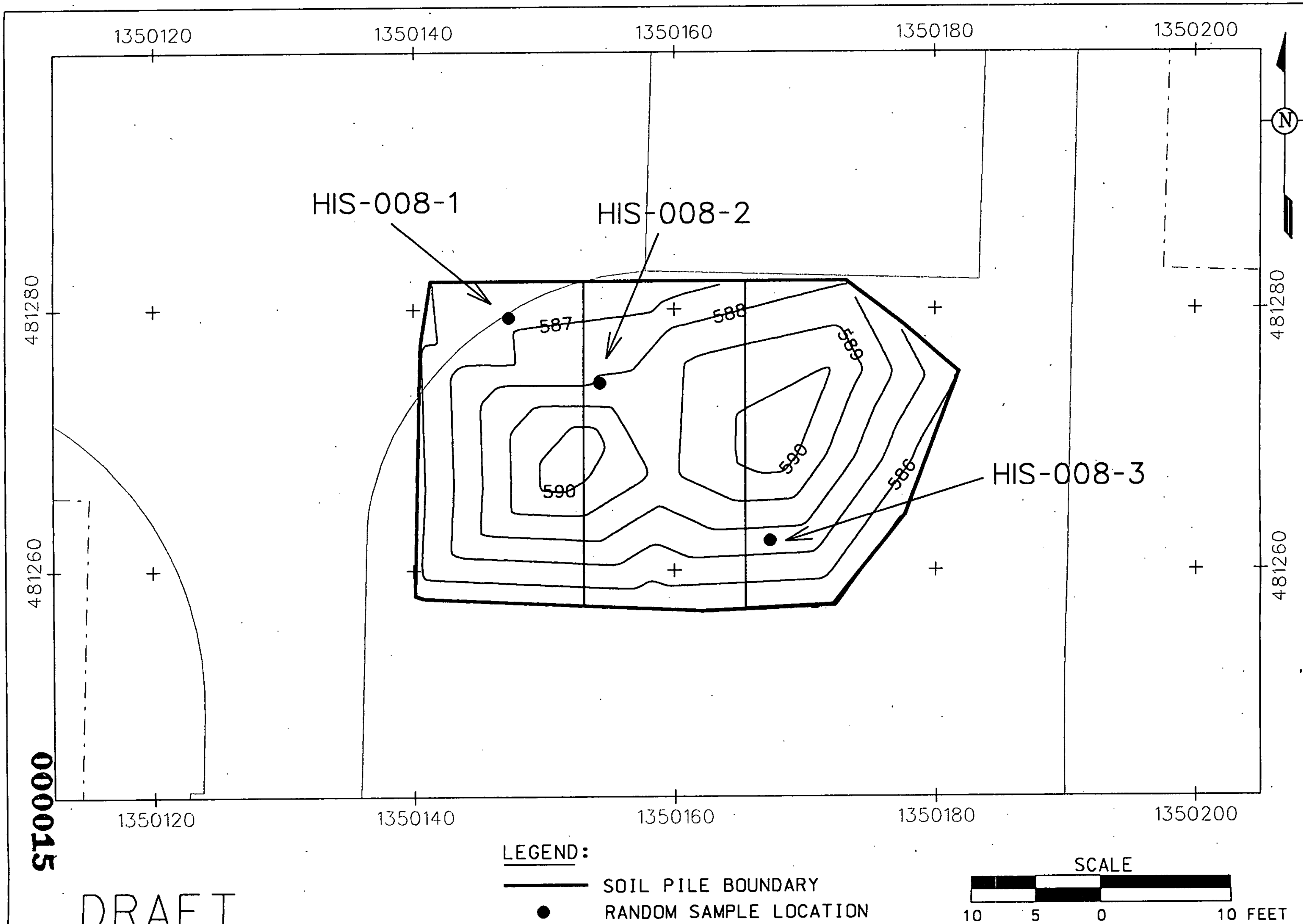
DRAFT

v:*5cj31*dgn*bmp*3a_010.dgn
STATE PLANAR COORDINATE SYSTEM 1983

FIGURE 2-3. STOCKPILE BPW-005 REAL-TIME SCANNING COVERAGE

01-DEC-2000

000014



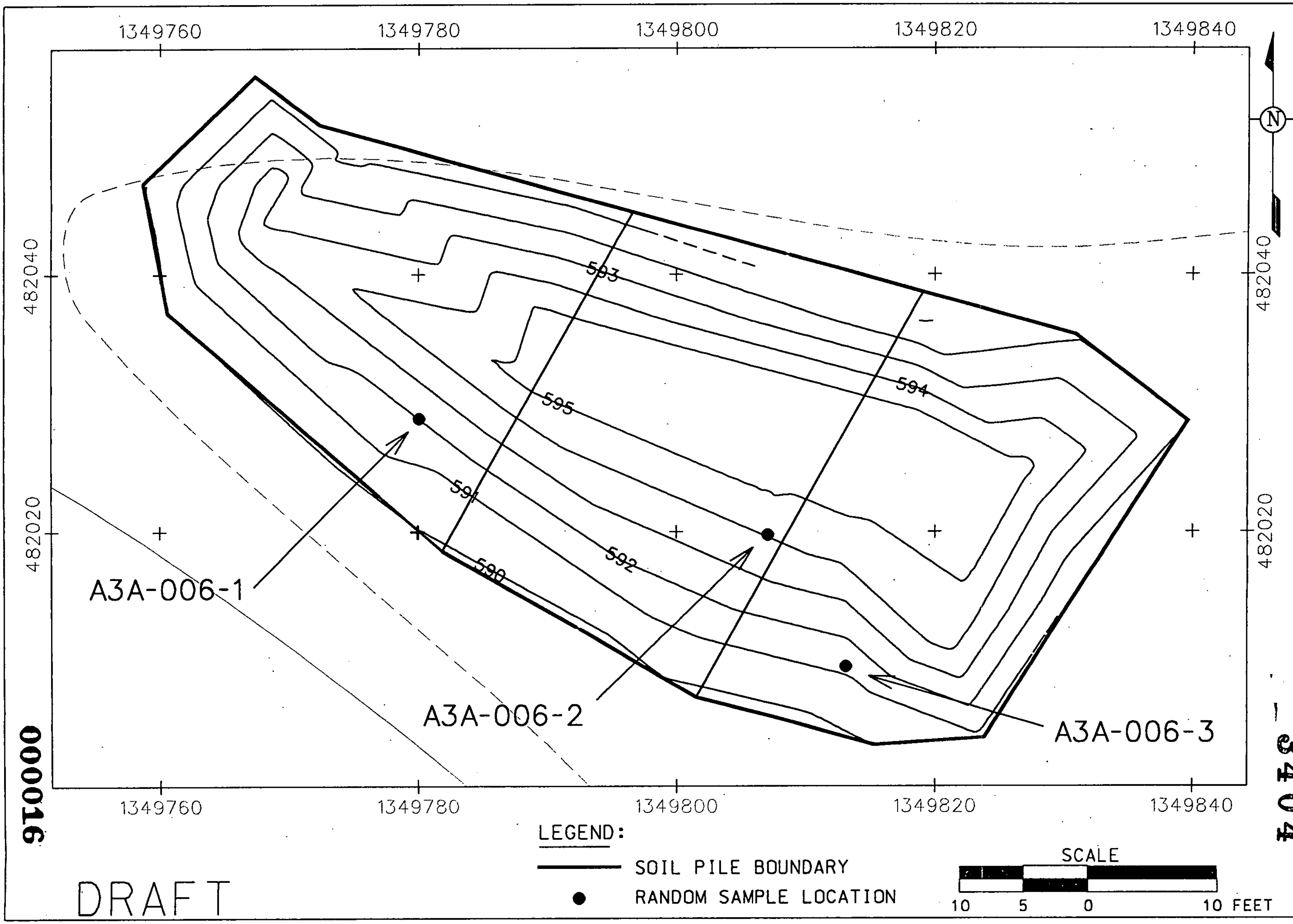
v:#5cj31#dgn#bmp#3a_002.dgn
STATE PLANAR COORDINATE SYSTEM 1983

01-DEC-2000

FIGURE 2-4. SAMPLING LOCATIONS FOR HIS-008

000015

3404



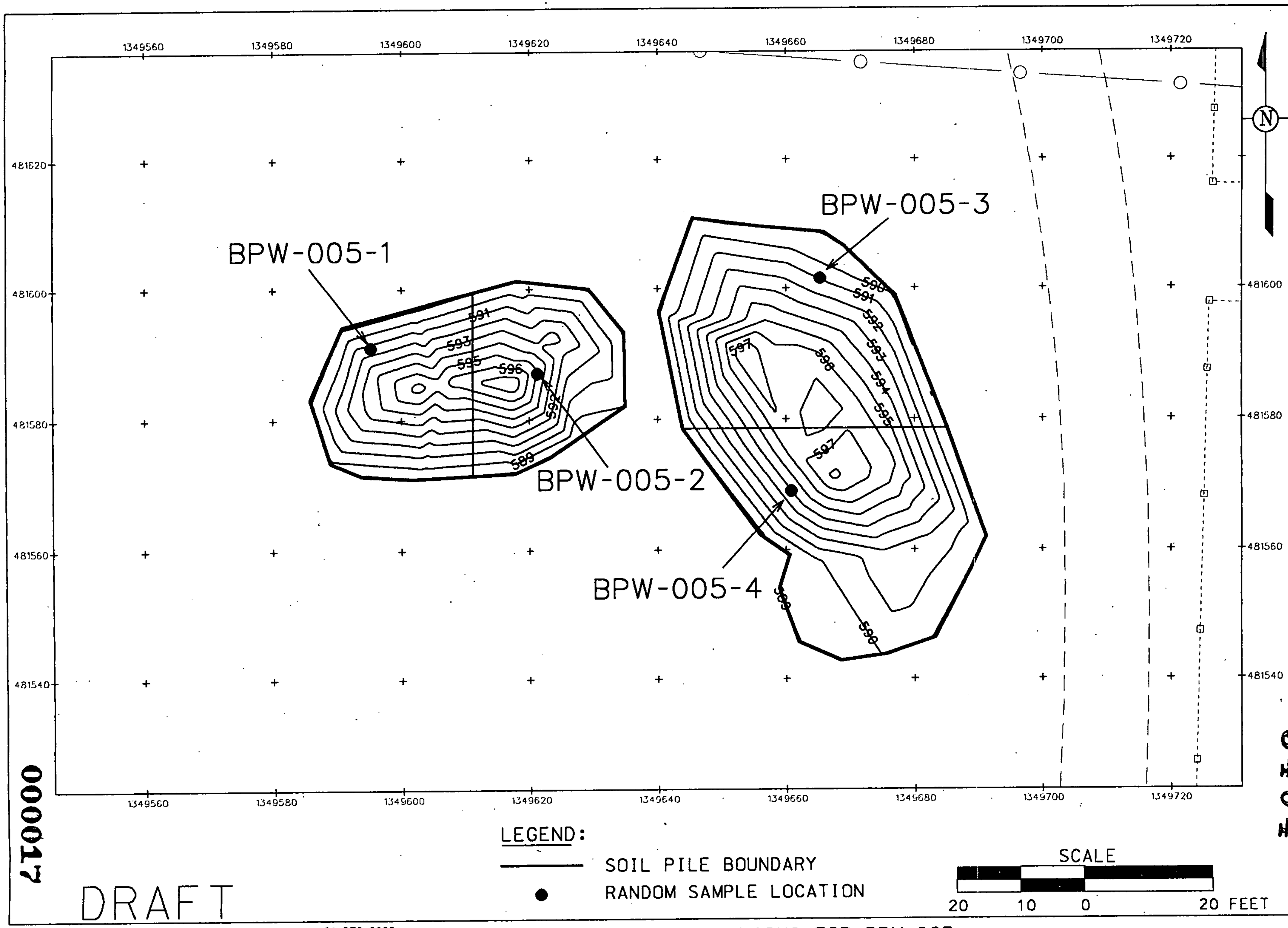
v:#5cj31#dgn#bmp#3a_003.dgn
STATE PLANAR COORDINATE SYSTEM 1983

01-DEC-2000

FIGURE 2-5. SAMPLING LOCATIONS FOR A3A-006

000016

3404



v:#5cj31#dgn#bmp#3a_004.dgn
STATE PLANAR COORDINATE SYSTEM 1983

01-DEC-2000 FIGURE 2-6. SAMPLING LOCATIONS FOR BPW-005

000017

3404

3.0 DATA SUMMARY AND CONCLUSIONS

The physical sampling results for Stockpiles HIS-008, A3A-006, and BPW-005 are listed in Tables 3-1 through 3-3. Real-time scanning results and physical sampling results from individual stockpiles are summarized below. In accordance with the PSP, a minimum of 10 percent of the analytical data associated with the physical sampling was validated to Analytical Support Level (ASL) B by the Fluor Fernald Data Quality Group.

As discussed in Section 1.3 of the PSP, the OSDF WAC Attainment Plan requires that all 18 WAC COCs and Resource Conservation and Recovery Act (RCRA) TCLP COCs be considered when sampling is conducted on stockpiles. Five of these COCs (neptunium-237, strontium-90, carbazole, boron, and mercury) have OSDF WAC limits that are much higher than detected levels at the site, and therefore were not included in the sampling. However, because carbazole is analyzed at the same time as 4-nitroaniline and bis(2-chloroisopropyl)ether, the carbazole results have been included in this report.

In addition, the practical quantitation limits for 4-nitroaniline and bis(2-chloroisopropyl)ether are well above the WAC established for these two compounds. Since it is not feasible to achieve detection limits at the WAC for these two constituents using current analytical methods, the EPA Contract Laboratory Program (CLP) Contract Required Detection Limits (CRDLs) of 830 micrograms per kilogram (μg/kg) for 4-nitroaniline and 330 μg/kg for bis(2-chloroisopropyl)ether were used as the default WAC attainment values for this sampling project.

3.1 STOCKPILE HIS-008

As discussed in Section 1.3.1 of the PSP, it was determined that Stockpile HIS-008 required sampling for total uranium, technetium-99, 12 volatile and semi-volatile compounds, and TCLP testing.

The HPGe real-time scanning measured surface total uranium concentrations ranging from less than 55.8mg/kg to 92.8 mg/kg. These results are summarized in Table 2-2 and the extent of the HPGe coverage is shown in Figure 2-1.

Physical sample locations are shown on Figure 2-4 and laboratory results are summarized in Table 3-1. Results for total uranium analyses ranged from 2.9 mg/kg to 28.6 mg/kg. Technetium-99 analytical results ranged from non-detects of less than 1 picoCurie per gram (pCi/g) to a high of 1.09 pCi/g. All TCLP organic and inorganic contaminant analyses were non-detect values (i.e., less than the EPA CLP CRDLs for these constituents) except for TCLP barium and TCLP selenium results, which were well below the RCRA characteristic limits.

3.2 STOCKPILE A3A-006

As discussed in Section 1.3.1 of the PSP, it was determined that Stockpile A3A-006 required sampling for total uranium, technetium-99, 12 volatile and semi-volatile compounds, and TCLP testing.

The HPGe real-time scanning measured surface total uranium concentrations ranging from 27.3 mg/kg to 44.1 mg/kg. These results are summarized in Table 2-2 and the extent of the HPGe coverage is shown on Figure 2-2.

Physical sample locations are shown on Figure 2-5 and laboratory results are summarized in Table 3-2. Results for total uranium analyses ranged from 4.84 mg/kg to 10.7 mg/kg. Technetium-99 analytical results ranged from non-detects of less than 1 pCi/g to a high of 3.4 pCi/g. All total and TCLP organic and inorganic contaminant analyses were non-detect values (i.e., less than the EPA CLP CRDLs for these constituents) except for TCLP barium, TCLP mercury, and TCLP selenium results, which were well below the RCRA characteristic limits. In addition, the TCLP chloroform result was "J" flagged due to lab contaminants, and is still an order of magnitude less than the RCRA characteristic limit.

3.3 STOCKPILE BPW-005

As discussed in Section 1.3.2 of the PSP, it was determined that Stockpile BPW-005 required sampling for total uranium and technetium-99.

The HPGe-measured, surface total uranium concentrations ranged from less than 16.4 mg/kg to 52.4 mg/kg. These results are summarized in Table 2-2, and the extent of the HPGe coverage is shown on Figure 2-3.

Physical sample locations are shown on Figure 2-6 and laboratory results are summarized in Table 3-3. Results for total uranium analyses ranged from 4.42 mg/kg to 28.3 mg/kg. Technetium-99 analytical results ranged from 0.4 pCi/g to a high of 0.66 pCi/g.

3.4 CONCLUSIONS

From evaluation of the real-time and physical sample analytical results it can be concluded that material in Stockpiles HIS-008, A3A-006, and BPW-005 is not RCRA characteristic and meets the WAC limits for placement in the OSDF.

The highest total uranium result measured using the HPGe was 92.8 mg/kg, an order of magnitude less than the WAC limit of 1030 mg/kg. The highest total uranium result from physical sampling was 28.6 mg/kg. The highest technetium-99 result was 3.4 pCi/g, less than one-fifth of the WAC limit of 29.1 pCi/g. All total organic and inorganic analyses from Stockpiles HIS-008 and A3A-006 resulted in non-detects at the EPA CLP CRDLs. TCLP testing of Stockpiles HIS-008 and A3A-006 did not detect any organic or inorganic constituents except for TCLP barium, TCLP mercury, and TCLP selenium results, which were well below the RCRA characteristic limits.

Based on these data, all soil from Stockpiles HIS-008, A3A-006, and BPW-005 qualifies for excavation and disposal in the OSDF.

3.5 EXCAVATION MONITORING METHODS AND STRATEGY

Excavation monitoring activities for HIS-008 and BPW-005 will be based on direction documented in V/FCN 20200-PSP-0007-3. Radiation technician oversight coverage will be required at all times during excavation. If suspect above-WAC material is encountered during excavation or between lift scans, characterization of the suspect area and any resulting excavation of above-WAC material will be documented in a variance to the PSP. All measurements will be collected and managed in accordance with the PSP. All real-time trigger levels and confirmation/delineation requirements are specified in Section 3.0 of the PSP. Total uranium real-time measurements will be taken following each 3-foot (±1 foot) lift of stockpile material, and the stockpile footprint will be scanned following excavation. Excavation of Stockpile A3A-006 was performed in accordance with these requirements.

V/FCN 20200-PSP-0007-3 also requires real-time scanning of the stockpile footprint following excavation. However, the footprint of Stockpile A3A-006 was not scanned following excavation because a debris staging area was being constructed at that location and later surface scanning will be performed prior to remediation of that area. This is documented in V/FCN 20200-PSP-0007-4.

(This page intentionally left blank)

TABLE 3-1
SUMMARY OF STOCKPILE HIS-008 PHYSICAL SAMPLING DATA

	HIS-008-1	HIS-008-2	HIS-008-3
Total Radiological Results			
Technetium-99 (pCi/g)	1.09 U	0.153 U	0.143 U
Total Uranium (mg/kg)	2.9 -	22.9 -	28.6 -
Total Pesticide Results (µg/kg)			
Alpha-Chlordane	1.6 U	1.7 U	1.7 U
Toxaphene	166 UJ	167 UJ	168 UJ
Total VOC Results (µg/kg)			
1,1-Dichloroethene	10 U	10 U	10 U
1,2-Dichloroethene (Total)	10 U	10 U	10 U
Bromodichloromethane	10 U	10 U	10 U
Chloroethane	10 UJ	10 UJ	10 UJ
Tetrachloroethene	10 U	10 U	10 U
Trichloroethene	10 U	10 U	10 U
Vinyl chloride	10 U	10 U	10 U
Total SVOC Results (µg/kg)			
4-Nitroaniline	810 U	830 UJ	830 UJ
Bis(2-Chloroisopropyl)ether	320 U	330 UJ	330 UJ
Carbazole	320 U	330 UJ	330 UJ
TCLP VOC Results (µg/L)			
1,1-Dichloroethene	70 U	70 U	70 U
1,2-Dichloroethene (Total)	50 U	50 U	50 U
2-Butanone	20000 U	20000 U	20000 U
Benzene	50 U	50 U	50 U
Carbon Tetrachloride	50 U	50 U	50 U
Chlorobenzene	10000 U	10000 U	10000 U
Chloroform	14 J	13 J	10 J
Tetrachloroethene	70 U	70 U	70 U
Trichloroethene	50 U	50 U	50 U
Vinyl chloride	20 U	20 U	20 U

TABLE 3-1
SUMMARY OF STOCKPILE HIS-008 PHYSICAL SAMPLING DATA
(Continued)

	HIS-008-1	HIS-008-2	HIS-008-3
TCLP SVOC, Pesticide and Herbicide Results (μg/L)			
1,4-Dichlorobenzene	6000 U	2000 UJ	2000 UJ
2,4,5-TP (Silvex)	100 U	100 U	100 U
2,4,5-Trichlorophenol	320000 U	80000 U	80000 U
2,4,6-Trichlorophenol	2000 U	400 U	400 U
2,4-D	1000 U	1000 U	1000 U
2,4-Dinitrotoluene	100 U	26 UJ	26 UJ
Chlordane	3 U	3 U	3 U
Endrin	2 UJ	2 UJ	2 UJ
Gamma-BHC (Lindane)	40 U	40 U	4 U
Heptachlor	0.8 U	0.8 U	0.8 U
Heptachlor epoxide	0.8 U	0.8 U	0.8 U
Hexachlorobenzene	100 U	26 UJ	26 UJ
Hexachlorobutadiene	400 U	100 UJ	100 UJ
Hexachloroethane	2000 U	600 UJ	600 UJ
M,p-Methylphenol	160000 U	40000 U	40000 U
Methoxychlor	0.4 U	0.5 U	0.4 U
Nitrobenzene	2000 U	400 UJ	400 UJ
o-Methylphenol	160000 U	40000 U	40000 U
Pentachlorophenol	80000 U	20000 U	20000 U
Pyridine	4000 U	1000 UJ	1000 UJ
Toxaphene	50 UJ	50 UJ	50 UJ
TCLP Metal Results (mg/L)			
Arsenic	0.0342 U	0.0342 U	0.0342 U
Barium	0.648 -	0.67 -	0.653 -
Cadmium	0.0014 U	0.0014 U	0.0014 U
Chromium	0.0036 U	0.0034 U	0.0036 U
Lead	0.0058 U	0.0058 U	0.0058 U
Mercury	0.00001 U	0.00001 U	0.00001 U
Selenium	0.124 -	0.0807 -	0.099 -
Silver	0.0022 U	0.0022 U	0.0022 U

mg/L – milligrams per Liter
SVOC – semi-volatile organic compound

Data Validation Qualifiers:
- U = undetected
- J = estimated
- \- = no qualifier
- NV = not validated

TABLE 3-2
SUMMARY OF STOCKPILE A3A-006 PHYSICAL SAMPLING DATA

	A3A-006-1	A3A-006-2	A3A-006-3
Total Radiological Results			
Technetium-99 (pCi/g)	0.117 U	0.052 U	3.4 -
Total Uranium (mg/kg)	10.7 J	4.84 -	4.97 -
Total Pesticide Results (μg/kg)			
Alpha-Chlordane	1.6 U	1.6 U	1.7 U
Toxaphene	164 UJ	159 UJ	166 UJ
Total VOC Results (μg/kg)			
1,1-Dichloroethene	10 U	10 U	10 U
1,2-Dichloroethene (Total)	10 U	10 U	10 U
Bromodichloromethane	10 U	10 U	10 U
Chloroethane	10 UJ	10 UJ	10 UJ
Tetrachloroethene	10 U	10 U	10 U
Trichloroethene	10 U	10 U	10 U
Vinyl chloride	10 U	10 U	10 U
Total SVOC Results (μg/kg)			
4-Nitroaniline	830 UJ	830 U	830 U
Bis(2-Chloroisopropyl)ether	330 UJ	330 U	330 U
Carbazole	330 UJ	330 U	330 U
TCLP VOC Results (μg/L)			
1,1-Dichloroethene	70 U	70 U	70 U
1,2-Dichloroethene (Total)	50 U	50 U	50 U
2-Butanone	20000 U	20000 U	20000 U
Benzene	50 U	50 U	50 U
Carbon Tetrachloride	50 U	50 U	50 U
Chlorobenzene	10000 U	10000 U	10000 U
Chloroform	13 J	13 J	12 J
Tetrachloroethene	70 U	70 U	70 U
Trichloroethene	50 U	50 U	50 U
Vinyl chloride	20 U	20 U	20 U

TABLE 3-2
SUMMARY OF STOCKPILE A3A-006 PHYSICAL SAMPLING DATA
(Continued)

	A3A-006-1	A3A-006-2	A3A-006-3
TCLP SVOC, Pesticide and Herbicide Results (µg/L)			
1,4-Dichlorobenzene	2000 U	2000 UJ	2000 U
2,4,5-TP (Silvex)	100 U	100 U	100 U
2,4,5-Trichlorophenol	400 U	80000 UJ	80000 U
2,4,6-Trichlorophenol	1000 U	400 UJ	400 U
2,4-D	1000 U	1000 U	1000 U
2,4-Dinitrotoluene	26 U	26 UJ	26 U
Chlordane	3 U	3 U	3 U
Endrin	2 UJ	2 UJ	2 UJ
Gamma-BHC (Lindane)	0.6 J	40 U	40 U
Heptachlor	0.8 U	0.8 U	0.8 U
Heptachlor epoxide	0.8 U	0.8 U	0.8 U
Hexachlorobenzene	26 U	26 UJ	26 U
Hexachlorobutadiene	100 U	100 UJ	100 U
Hexachloroethane	600 U	600 UJ	600 U
m,p-Methylphenol	40000 U	40000 UJ	40000 U
Methoxychlor	0.5 U	0.5 U	0.6 U
Nitrobenzene	400 U	400 UJ	400 U
o-Methylphenol	40000 U	40000 UJ	40000 U
Pentachlorophenol	6 J	20000 UJ	20000 U
Pyridine	1000 U	1000 UJ	1000 U
Toxaphene	50 UJ	50 UJ	50 UJ
TCLP Metal Results (mg/L)			
Arsenic	0.0342 U	0.0342 U	0.0342 U
Barium	0.512 -	0.379 -	0.487 -
Cadmium	0.0014 U	0.0014 U	0.0014 U
Chromium	0.0014 U	0.0038 U	0.0025 U
Lead	0.0058 U	0.0058 U	0.0058 U
Mercury	0.00001 U	0.00001 U	0.00002 -
Selenium	0.116 -	0.188 -	0.149 -
Silver	0.0022 U	0.0022 U	0.0022 U

Data Validation Qualifiers:
U = undetected
J = estimated
\- = no qualifier
NV = not validated

TABLE 3-3
SUMMARY OF STOCKPILE BPW-005 PHYSICAL SAMPLING DATA

	BPW-005-1	BPW-005-2	BPW-005-3	BPW-005-4
Total Radiological Results				
Technetium-99 (pCi/g)	0.42 NV	0.4 NV	0.66 NV	0.61 NV
Total Uranium (mg/kg)	28.3 NV	24 NV	17 NV	4.42 NV

Data Validation Qualifiers:
- U = undetected
- J = estimated
- \- = no qualifier
- NV = not validated

REFERENCES

U.S. Department of Energy, 1998a, "WAC Attainment Plan for the On-Site Disposal Facility," Final, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.

U.S. Department of Energy, 1998b, "Sitewide Excavation Plan," Final, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.

U.S. Department of Energy, 2000, "Project Specific Plan For Sampling Area 3A Miscellaneous Stockpiles For OSDF WAC Attainment," Revision 1, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.

APPENDIX A

PROJECT SPECIFIC PLAN FOR SAMPLING AREA 3A MISCELLANEOUS STOCKPILES FOR OSDF WAC ATTAINMENT AND ASSOCIATED VARIANCE/FIELD CHANGE NOTICES

VARIANCE LOG FOR PROJECT SPECIFIC PLAN FOR SAMPLING AREA 3A MISCELLANEOUS STOCKPILES FOR OSDF WAC ATTAINMENT

Variance No.	Variance Date	Variance Description	Significant? (Y or N)	Date Signed	Date Distributed	EPA/OEPA Approval
20200-PSP-0007-1	8/2/00	1. Change to sample containers and required sample mass on Table 2-1 to accommodate limited sample material recovery. 2. Depth interval designations will apply only to biased (PID or beta/gamma hits) samples. 3. Sample interval for additional sample material extended from 6 to 12 inches.	N	8/3/00	8/3/00	N/A
20200-PSP-0007-2	8/16/00	1. Change Section 2.3.3 to require headspace analysis only after sustained PID reading of 5 ppm above background. 2. Change Table 2-1 TCLP metals holding time note that holding time for mercury is 28 days. 3. Change the name of the group responsible for the entry of data into SED to Project Data Management group.	N	8/16/00	8/16/00	N/A
20200-PSP-0007-3	8/16/00	Provides direction for excavation monitoring of Stockpiles A3A-006, HIS-008 and BPW-005.	Y	8/17/00	8/17/00	8/18/00
20200-PSP-0007-4	11/29/00	Explains that the footprint of stockpile A3A-006 was not scanned following excavation because a debris staging area was being constructed at that location and the area has the potential to become recontaminated. Later surface scanning will be performed prior to remediation of that area.	N	11/29/00	11/30/00	N/A

VARIANCE / FIELD CHANGE NOTICE 3404	V/F 20200-PSP-0007-4
WBS NO.: ECDC #20200-PSP-0007 Rev 0	Page 1 of 1
PROJECT TITLE: Project Specific Plan for Sampling Area 3A Miscellaneous Stockpiles for OSDF WAC Attainment	Date 11/28/00

VARIANCE / FIELD CHANGE NOTICE (Include justification):

1) Field Change Notice: V/FCN 20200-PSP-0007-3 provides direction for excavation monitoring of stockpiles A3A-006, HIS-008 and BPW-005. It specifies that following stockpile excavation, the stockpile footprint will be real-time scanned in accordance with the Area 3A/4A Surface Predesign Investigation PSP (20200-PSP-0004). The footprint of stockpile A3A-006 was not real-time scanned following excavation.

Justification: The footprint of stockpile A3A-006 was not scanned following excavation because a debris staging area was being constructed at that location and the area has the potential to become recontaminated. Later surface scanning will be performed prior to remediation of that area.

REQUESTED BY: Bill Westerman Date: 11/28/00

X IF REQD	VARIANCE/FCN APPROVAL	DATE	X IF REQD	VARIANCE/FCN APPROVAL	DATE
X	QUALITY ASSURANCE Frank Thompson	11-28-00	X	PROJECT MANAGER [illegible]	11/29/00
	DATA QUALITY MANAGEMENT		X	CHARACTERIZATION LEAD Bill Westerman	11/28/00
	ANALYTICAL CUSTOMER SUPPORT		X	RTIMP MANAGER J. White	11/28/00
X	OTHER (WAO) Christa Walls	11/28/00		SAMPLING MANAGER	

VARIANCE/FCN APPROVED [X]YES [ ]NO REVISION REQUIRED: [ ]YES [x]NO

DISTRIBUTION

PROJECT MANAGER:	DOCUMENT CONTROL: Esther Dittmer	OTHER:
QUALITY ASSURANCE:	OTHER:	OTHER:
FIELD MANAGER:	OTHER:	OTHER:

VARIANCE / FIELD CHANGE NOTICE 3404

V/F 20200-PSP-0007-3

WBS NO.: ECDC #20200-PSP-0007 Rev. 1

Page 1 of 2

PROJECT TITLE: **Project Specific Plan for Sampling Area 3A Miscellaneous Stockpiles for OSDF WAC Attainment**

Date 8/16/2000

VARIANCE / FIELD CHANGE NOTICE (Include justification):

Field Change Notice: The purpose of this variance is to provide direction for excavation monitoring of stockpiles A3A-006, HIS-008, and BPW-005. Rad-tech oversight coverage is required at all times during excavation of these stockpiles. Real-time measurements will be collected on the excavation surface area after each lift of 3 feet ±1 foot. All real-time measurements will be recorded on an Excavation Monitoring Form, which is attached to this variance. Following excavation, the stockpile footprint will be real-time scanned in accordance with the Area 3A/4A Surface Predesign Investigation (20200-PSP-0004).

The RTRAK and RSS measurements will be identified as follows:

Stockpile-X-Y, where The stockpile will be indicated by A3A-006, HIS-008, or BPW-005
X indicates the lift number that was excavated (sequential numbering)
Y indicates the unique batch number assigned by the Real-Time Instrumentation Group.

For example, A3A-006-2-302 would be the RTRAK or RSS scan of stockpile A3A-006 after the second lift has been excavated and is batch number 302.

The HPGe measurements will be identified as follows:

Stockpile-X-Z-G, where The stockpile will be indicated by A3A-006, HIS-008, or BPW-005
X indicates the lift number that was excavated (sequential numbering)
Z indicates the measurement for the lift (sequential numbering)
G indicates a gamma measurement.

For example, A3A-006-1-5-G would be the fifth HPGe measurement after the first lift of A3A-006 has been excavated.

If suspect above-WAC material is encountered during excavation and/or between-lift scans, characterization of the excavated above-WAC footprint will be documented in a variance to the PSP.

All measurements will be collected and managed in accordance with the PSP. All trigger levels and confirmation/delineation requirements are specified in Section 3.0 of the PSP.

Justification: Excavation was not in the original scope of the PSP, so this variance provides direction for the excavation of stockpiles A3A-006, HIS-008, and BPW-005.

Requested By: Christine Messerly Date: 8/16/2000

X IF REQD	VARIANCE/FCN APPROVAL	DATE	X IF REQD	VARIANCE/FCN APPROVAL	DATE
X	QUALITY ASSURANCE	8-17-00	X	PROJECT MANAGER	8/16/00
	DATA QUALITY MANAGEMENT		X	Characterization Lead	8/16/2000
	SAMPLE MANAGEMENT OFFICE		X	RTIMP Manager	8/16/00
X	WAO Christa Walls	8/17/00		Sampling Manager	

VARIANCE/FCN APPROVED [X]YES [ ]NO REVISION REQUIRED: [ ]YES [x]NO

DISTRIBUTION

PROJECT MANAGER:	DOCUMENT CONTROL:	OTHER:
QUALITY ASSURANCE:	OTHER:	OTHER:
FIELD MANAGER:	OTHER:	OTHER:

ORIGINAL

V|FCN 20200-PSP-0007-
Page 2 of 2
August 16, 2000

EXCAVATION MONITORING

1. Area Description: ______________________ Area ID (e.g. Lift Area / SA /other): ______________

Comments: ______________________________ PWID #: ______________

2. *Section 1 - Data Collection*
Equipment Used: ☐ RTRAK ☐ RSS ☐ GATOR ☐ HPGe Unit No: __________

Calibration Acceptable ☐ Yes Date: ______________
Note: If not in calibration, do not use equipment until calibration is acceptable

3. RTRAK / RSS/ GATOR

Location Map attached? ☐ Yes ☐ No

List of Batch #s:

Coverage in accordance with PSP? ☐ Yes ☐ No

If "No":
☐ Equipment Malfunction ☐ Weather
☐ Rough Terrain ☐ Standing Water
☐ Other: ______________

Data Verification Checklist attached? ☐ Yes ☐ No

4. HPGe

Summary Data Report attached? ☐ Yes ☐ No
Location Map attached? ☐ Yes ☐ No

List of Data Points if Summary Data Report is not attached:

Identifier	Total Uranium Result (ppm)	Identifier	Total Uranium Result (ppm)

Data Verification Checklist attached? ☐ Yes ☐ No

5. This signature indicates the data generated for this area by this equipment on this day is correct and valid within the confines of equipment performance and as defined in PSP #: ______________

Name: ______________ ______________ ______________
(Printed) (Signature) (Signature Date)

6. *Section 2 - Characterization*
Review real-time data
Sufficient real-time coverage? ☐ Yes ☐ No
Further action required: ______________
All data points < total uranium WAC? ☐ Yes ☐ No
If no, define > WAC area(s) and extent with HPGe if applicable (see attached real-time map) as defined in PSP.
Comments (if required): ______________

The signature indicates this area has been characterized using the real-time data generated in Section 1 above and in accordance with PSP listed in Box 5.

Name: ______________ ______________ ______________
(Printed) (Signature) (Signature Date)

7. *Section 3 - WAO*
Review attached documentation ☐ Yes MTL Designation: ______________

This signature indicates this area can be excavated and dispositioned in accordance with the characterization provided in Section 2 above. ☐ Yes ☐ No and Reason: ______________

Name: ______________ ______________ ______________
(Printed) (Signature) (Signature Date)

Assigned Data Group for HPGe from WAO : ______________

000032

FS-F-5195
REV. 2: 05/17/99

Instructions for form completion on reverse

3404

VARIANCE / FIELD CHANGE NOTICE

VARIANCE / FIELD CHANGE NOTICE	V/F 20200-PSP-0007-2
WBS NO.: ECDC #20200-PSP-0007 Rev 0 1	Page 1 of 1
PROJECT TITLE: Project Specific Plan for Sampling Area 3A Miscellaneous Stockpiles for OSDF WAC Attainment	Date 08/16/00

VARIANCE / FIELD CHANGE NOTICE (Include justification):

1) Field Change Notice: Change the fourth sentence of the second paragraph of Section 2.3.3 (Biased Sample Selection) to read: Any 1-foot sample interval with sustained 5 parts per million (ppm) above-background reading on the PID will be subjected to a headspace analysis in accordance with procedure EQT-04, Photoionization Detector.

Justification: The requirement for a sustained reading at 5 ppm above-background was inadvertently left out of the original PSP text.

2) Field Change Notice: Change the holding time for TCLP metals listed in Table 2-1, Sampling and Analytical Requirements, to read: 6 months (Hg: 28 days).

Justification: The shorter hold time of 28 days for mercury was inadvertently left out of the original table.

3) Field Change Notice: Change the first sentence of the last paragraph of Section 6.0, Data Management to read: The Project Data Management (PDM) organization will perform data entry into the SED.

Justification: This reflects the correct name of the SED data entry group.

ORIGINAL

REQUESTED BY: Bill Westerman Date: 08/16/00

X IF REQD	VARIANCE/FCN APPROVAL	DATE	X IF REQD	VARIANCE/FCN APPROVAL	DATE
X	QUALITY ASSURANCE	8-16-00	X	PROJECT MANAGER	8/16/00
	DATA QUALITY MANAGEMENT		X	CHARACTERIZATION LEAD Bill Westerman	8/16/00
X	ENVIRONMENTAL COMPLIANCE SUPPORT	08/16/2000		RTIMP MANAGER	
X	OTHER (WAO) Christa Walls	8/16/00	X	SAMPLING MANAGER Tom Buhrlage	8/16/00

VARIANCE/FCN APPROVED [X]YES [ ]NO REVISION REQUIRED: [ ]YES [x]NO

DISTRIBUTION

PROJECT MANAGER:	DOCUMENT CONTROL: Esther Dittmer	OTHER:
QUALITY ASSURANCE:	OTHER:	OTHER:
FIELD MANAGER:	OTHER:	OTHER:

VARIANCE / FIELD CHANGE NOTICE 3404	V/F 20200-PSP-0007-1
WBS NO.: ECDC #20200-PSP-0007 Rev 0/1 JAK 8/7/00	Page 1 of 2
PROJECT TITLE: Project Specific Plan for Sampling Area 3A Miscellaneous Stockpiles for OSDF WAC Attainment	Date 08/02/00

VARIANCE / FIELD CHANGE NOTICE (Include justification):

1) Field Change Notice: Change the sample containers and required sample mass requirements in Table 2-1 (Page 2-7) as noted on the attached corrected table (changes are shaded).

Justification: Required sample masses were minimized to accommodate limited sample material recovery during field sampling.

2) Field Change Notice: Depth interval designations described in Section 2.4, Sample Identification, will not apply to scheduled samples (listed in Appendix D, Primary/Secondary Soil Samples). Depth interval designations will apply only to biased samples and associated archive samples collected as a result of PID or beta/gamma hits.

Justification: Sample depth designation is unnecessary for the scheduled samples because each boring location has only one sample and its sample identification and associated depth is listed in Appendix D. Depth interval identification will be necessary only for unscheduled samples collected as a result of PID or beta/gamma hits.

3) Field Change Notice: Change the second sentence of the second paragraph of Section 2.3, Sample Collection Methods, to read: "If additional volume is necessary, the sample interval may be extended an additional 12 inches".

Justification: Because of the unconsolidated nature of the material being sampled, the depth of interval extension to collect additional sample material beyond the initial 1-foot interval was increased from 6 inches to 12 inches.

REQUESTED BY: Bill Westerman Date: 08/02/00

X IF REQD	VARIANCE/FCN APPROVAL	DATE	X IF REQD	VARIANCE/FCN APPROVAL	DATE
X	QUALITY ASSURANCE [signature]	8-3-00	X	PROJECT MANAGER [signature]	8/3/00
	DATA QUALITY MANAGEMENT		X	CHARACTERIZATION LEAD Bill Westerman	8/2/00
X	ANALYTICAL CUSTOMER SUPPORT [signature]	08/02/00		RTIMP MANAGER	
X	OTHER (WAO) [signature]	8/2/00	X	SAMPLING MANAGER Thomas Bullock	8/2/00
VARIANCE/FCN APPROVED [X]YES [ ]NO			REVISION REQUIRED: [ ]YES [x]NO		

DISTRIBUTION

PROJECT MANAGER:	DOCUMENT CONTROL: Esther Dittmer	OTHER:
QUALITY ASSURANCE:	OTHER:	OTHER:
FIELD MANAGER:	OTHER:	OTHER:

TABLE 2-1
SAMPLING AND ANALYTICAL REQUIREMENTS

Analyte	Sample Matrix	Lab	ASL	Preserve	Holding Time	Container	Required Sample Mass
Total Uranium Technetium-99 (TALs A and B)	Solid	On-site	B	None	12 months	250-mL widemouth glass	10g
Total VOCs (TAL C)	Solid	Off-site	B	Cool to 4°C	14 days	60-mL Septa widemouth glass with Teflon-lined lid	fill container to top (no head space)
Total SVOCs (TAL D)	Solid	Off-site	B	Cool to 4°C	14 days	60-mL Septa widemouth glass with Teflon-lined lid	Fill container
Total Pesticides (TAL E)	Solid	Off-site	B	Cool to 4°C	14 days	120-mL widemouth glass with Teflon-lined lid	30g/90g*
TCLP VOCs (TAL F)	Solid	Off-site	B	Cool to 4°C	14 days	60-mL glass with Teflon-lined lid	fill container to top (no head space)
TCLP SVOCs/ Pesticides/ Herbicides (TAL G)	Solid	Off-site	B	Cool to 4°C	14 days	8-oz. glass with Teflon-lined lid	200g/600g*
TCLP Metals (TAL H)	Solid	On-site	B	Cool to 4°C	6 months	120-mL glass with Teflon-lined lid	100g
Alpha/Beta Screen	Solid	On-site	N/A	None	None	Any container	10g
Trip Blank	Liquid	Off-site	B	Cool to 4°C; pH <2 by HCl or H_2SO_4	14 days	3 x 40-mL glass with Teflon-lined lid	fill to top
Archive	Solid	N/A	N/A	None	12 months	250-mL widemouth glass	50g

* One sample for each off-site shipment will require the greater mass for laboratory QC analysis.
Note: Off-site samples will be recorded on a separate Chain of Custody form from the on-site samples.

3404

PROJECT SPECIFIC PLAN FOR SAMPLING AREA 3A MISCELLANEOUS STOCKPILES FOR OSDF WAC ATTAINMENT

SOIL AND DISPOSAL FACILITY PROJECT

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
FERNALD, OHIO

JUNE 29, 2000

U.S. DEPARTMENT OF ENERGY
FERNALD AREA OFFICE

20200-PSP-0007
REVISION 1

PROJECT SPECIFIC PLAN FOR SAMPLING AREA 3A MISCELLANEOUS STOCKPILES FOR OSDF WAC ATTAINMENT

Document Number 20200-PSP-0007

Revision 1

June 29, 2000

APPROVAL:

Rich Abitz, Area 3A Project Manager — 6/29/00 Date
Soil and Disposal Facility Project

Bill Westerman
for Christine Messerly, Area 3A Characterization Lead — 6/29/00 Date
Soil and Disposal Facility Project

Linda Barlow, Excavation Manager — 6/30/00 Date
Waste Acceptance Organization

Frank Thompson
Frank Thompson, Quality Assurance — 6/30/00 Date
Soil and Water Projects

FERNALD ENVIRONMENTAL MONITORING PROJECT

Fluor Fernald, Inc.
P.O. Box 538704
Cincinnati, Ohio 45253-8704

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ACRONYMS AND ABBREVIATIONS

ASL	analytical support level
ccpm	corrected counts per minute
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COCs	constituents of concern
DQO	Data Quality Objectives
FACTS	Fernald Analytical Customer Tracking System
GPC	Gas Proportional Count
GPS	Global Positioning System
HPGe	high-purity germanium (detector)
ICP/MS	Inductively Coupled Plasma/Mass Spectroscopy
LAN	Local Area Network
µg/kg	micrograms per kilogram
mg/kg	milligrams per kilogram
mL	milliliter
NaI	sodium iodide
OSDF	On-Site Disposal Facility
OU5	Operable Unit 5
pCi/g	picoCuries per gram
PID	photoionization detector
ppm	parts per million
PQL	practical quantitation limit
PSP	Project Specific Plan
QA	Quality Assurance
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
RMS	Radiation Measurement System
RSS	Radiation Scanning System
RTIMP	Real-Time Instrumentation Measurement Program
RTRAK	Real Time Radiation Tracking System
RWP	Radiological Work Permit
SCQ	Sitewide CERCLA Quality Assurance Project Plan
SDFP	Soil and Disposal Facility Project
SED	Sitewide Environmental Database
SEP	Sitewide Excavation Plan
SVOC	semi-volatile organic compound
TAL	Target Analyte List
TCLP	toxicity characteristic leaching procedure
V/FCN	Variance/Field Change Notice
VOC	volatile organic compound
WAC	waste acceptance criteria
WAO	Waste Acceptance Organization

1.0 INTRODUCTION

1.1 PURPOSE

This project specific plan (PSP) has been developed to evaluate attainment of the On-Site Disposal Facility (OSDF) waste acceptance criteria (WAC) for soil contained in three miscellaneous stockpiles in Remediation Area 3A, as required by the Sitewide Excavation Plan (SEP) and the WAC Attainment Plan for the OSDF. The stockpile locations are shown on Figure 1-1. The sampling strategy presented in this PSP includes random and biased physical sampling throughout the stockpile and real-time gamma spectrometry measurements over the stockpile surfaces. This approach is identical to the WAC attainment sampling performed on other stockpiles in Area 3A.

Characterization of these stockpiles is necessary prior to excavation to evaluate WAC attainment. Following characterization, layered excavation will be conducted and each 3±1-foot lift will be real-time scanned with sodium iodide (NaI) or high-purity germanium (HPGe) detector measurements.

This PSP fulfills the requirements of the SEP and the WAC Attainment Plan for the OSDF for developing predesign investigation plans and for documenting the justification for selection of stockpile-specific WAC constituents of concern (COCs). The data generated under this PSP will be used to 1) demonstrate that soil meeting the OSDF WAC may be bulk excavated and placed in the OSDF, 2) identify areas of soil which exceed the OSDF WAC, if any, and 3) determine the excavation approach to these stockpiles.

1.2 STOCKPILE HISTORIES

Stockpile HIS-008 is located southeast of Building 64 and consists of approximately 72 cubic yards of soil and debris. Stockpile A3A-006 is located southeast of the former KC-2 Warehouse and north of the Impacted Material Haul Road. It consists of approximately 210 cubic yards of soil and gravel. The origin of these stockpiles is not known and there are no associated historical data.

Stockpile BPW-005 is located in the northern portion of the old Coal Pile area and consists of approximately 460 cubic yards of coal, soil, gravel, and concrete pieces. This pile was created in 1998 from material generated during the decontamination and dismantlement of the Boiler Plant and from dredging the Coal Pile runoff basin. The majority of the existing data on this pile were collected from the area of the Boiler Plant between 1989 and 1993, with a small portion being collected in 1999 during Area 3A predesign activities. These data for the WAC COCs are presented in Appendix C.

1.3 DETERMINATION OF STOCKPILE-SPECIFIC WAC COCS

The OSDF WAC Attainment Plan requires that all 18 WAC COCs and Resource Conservation and Recovery Act (RCRA) toxicity characteristic COCs be considered when sampling is conducted on stockpiles. The following discussion evaluates these constituents and proposes the final list of WAC attainment COCs for each miscellaneous stockpile.

A number of constituents have OSDF WAC limits that are much higher than detected levels at the site. These include the following:

Constituent	WAC Limit	Highest Detected Level at the Site
Neptunium-237	3.12×10^{9} pCi/g	37.2 pCi/g
Strontium-90	5.67×10^{10} pCi/g	47.6 pCi/g
Carbazole	7.27×10^{4} mg/kg	89 mg/kg
Boron	1,040 mg/kg	36 mg/kg
Mercury	56,000 mg/kg	130.9 mg/kg

Because the highest site activities or concentrations for these constituents are significantly lower than the OSDF WAC limits, these constituents will not be WAC COCs for any of the miscellaneous stockpiles.

1.3.1 Stockpiles HIS-008 and A3A-006

Because there are no existing data on HIS-008 and A3A-006 and the origin of the piles is unknown, samples from the piles will be analyzed for the full list of WAC COCs (excluding the five eliminated above) and RCRA toxicity characteristic leaching procedure (TCLP). The practical quantitation limits (PQL) for two of the WAC COCs, 4-nitroaniline and bis(2-chloroisopropyl)ether, are well above the WAC established for these two compounds. Since it is not feasible with current analytical methods to achieve detection limits at the WAC established for these two semi-volatile organic compounds (SVOCs), the default WAC attainment values for 4-nitroaniline and bis(2-chloroisopropyl)ether will be the EPA Contract Laboratory Program contract required detection limits of 830 micrograms per kilogram (μg/kg) and 330 μg/kg, respectively. Table 1-1 presents the complete list of stockpile-specific WAC COCs for stockpiles HIS-008 and A3A-006.

1.3.2 Stockpile BPW-005

The existing data on stockpile BPW-005 are presented in Appendix B and consist mainly of samples that were collected from the Boiler Plant area during the RI/FS and analyzed for organics, radionuclides, metals, and RCRA TCLP. No results exceeded the OSDF WAC, and all but the total uranium results were several orders of magnitude lower than the WAC limits. Likewise, the TCLP results were significantly lower than the regulatory limit for toxicity characteristic waste. However, there was only one sample analyzed for technetium-99, a widespread contaminent at the site. Based on these existing data, samples from BPW-005 will be analyzed for total uranium and technetium-99 only. These COCs are listed on Table 1-1.

1.4 SCOPE

Under this PSP, real-time measurements and physical sampling will be performed on Stockpiles HIS-008, A3A-006, and BPW-005 to identify and bound soil with contaminant concentrations above the OSDF WAC. Following review of the sample results, additional samples may be collected beyond those identified in this PSP if the extent of above-WAC material has not been adequately bound. In this situation, a variance to this PSP will be written. Sampling activities carried out under this PSP will be performed in accordance with the Sitewide Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Quality Assurance Project Plan (SCQ), the SEP, the WAC Attainment Plan for the OSDF, and Data Quality Objectives (DQO) SL-048, Revision 5 (see Appendix A), and DQO SL-055, Revision 0 (see Appendix A).

1.5 KEY PROJECT PERSONNEL

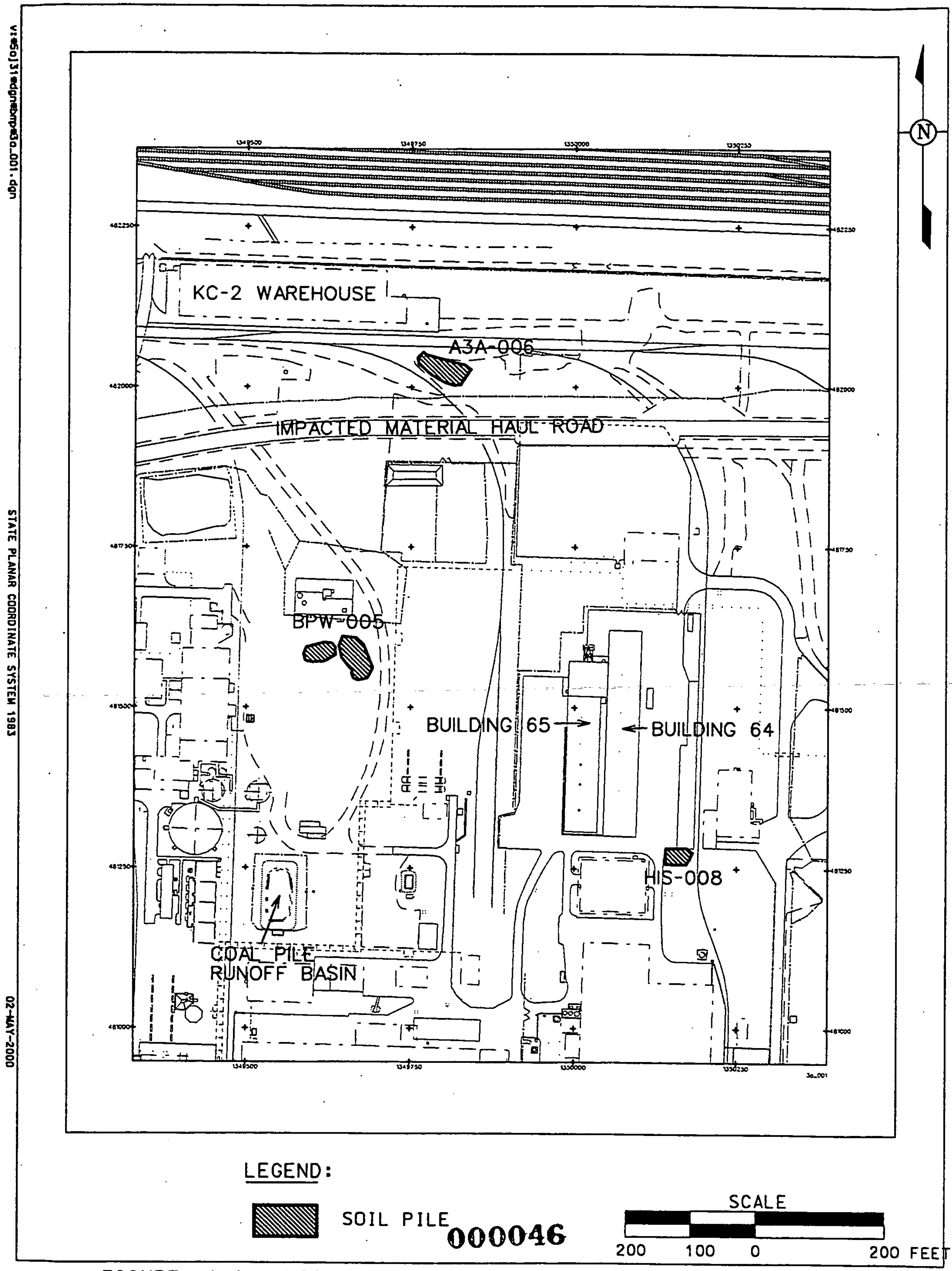
Team members responsible for coordination of work in accordance with this PSP are listed in Table 1-2.

TABLE 1-1
STOCKPILE-SPECIFIC CONSTITUENTS OF CONCERN

HIS-008	A3A-006	BPW-005
Total Uranium	Total Uranium	Total Uranium
Technetium-99	Technetium-99	Technetium-99
Bromodichloromethane	Bromodichloromethane	
Cloroethane	Cloroethane	
1,1-Dichloroethene	1,1-Dichloroethene	
1,2-Dichloroethene	1,2-Dichloroethene	
Tetrachloroethene	Tetrachloroethene	
Trichloroethene	Trichloroethene	
Vinyl Chloride	Vinyl Chloride	
Alpha-chlordane	Alpha-chlordane	
Toxaphene	Toxaphene	
Carbazole	Carbazole	
4-Nitroaniline	4-Nitroaniline	
Bis(2-chloroisopropyl)ether	Bis(2-chloroisopropyl)ether	
TCLP	TCLP	

TABLE 1-2
KEY PROJECT PERSONNEL

Title	Primary	Alternate
DOE Contact	Rob Janke	Kathi Nickel
Area 3A Project Manager	Rich Abitz	Jyh-Dong Chiou
Area 3A Characterization Lead	Christine Messerly	Bill Westerman
Real-Time Characterization Lead	Joan White	Dave Allen/Brian McDaniel
Field Sampling Lead	Tom Buhrlage	Jim Hey
Surveying Lead	Jim Schwing	Jim Capannari
Waste Acceptance Organization (WAO) Stockpile Contact	Linda Barlow	Christa Walls
FEMP Sample Management Office Contact	Audrey Hannum	Chuck White
Data Management Lead	Bill Westerman	Christine Messerly
Field Data Validation Contact	Jenine Rogers	Jim Cross
Data Validation Contact	Jim Chambers	Jim Cross
Quality Assurance Contact	Reinhard Friske	Mary Eleton
FACTS/SED Database Management Contact	Cara Sue Schaefer	Krista Blades
Health and Safety Contact	Debbie Grant	Jeff Middaugh/ Phillip Thomas



000046

FIGURE 1-1. LOCATIONS OF AREA 3A MISCELLANEOUS STOCKPILES

2.0 SAMPLING STRATEGY

2.1 DETERMINATION OF NUMBER OF SAMPLES

In accordance with the SEP and OSDF WAC Attainment Plan, the number of samples determined to adequately characterize Stockpiles HIS-008, A3A-006, and BPW-005 is based on the current data set, the Operable Unit 5 (OU5) Remedial Investigation/Feasibility Study (RI/FS) sampling density in the Former Production Area, process knowledge of the stockpiles, and sampling density in previous soil stockpile sampling projects. Based on these requirements, a minimum of three samples each will be collected from HIS-008, and A3A-006, and a minimum of four samples from BPW-005. All samples will be analyzed for the stockpile-specific COCs presented in Section 1.3.

The sample density for these stockpiles translates to an average of one sample per 82 cubic yards, which is a higher density relative to the WAC attainment sampling activities performed for other soil piles (i.e., Stockpile 2, Stockpile 4 and the eastern section of Stockpile 1 had sample density of one sample per 230 cubic yards, Area 1, Phase I West Impacted Soil Stockpile had one sample per 420 cubic yards, and Removal Action 17 Stockpile 5 had one sample per 350 cubic yards). These piles have a higher sampling density to ensure that each pile has a statistically significant number of samples.

2.2 SELECTION OF SAMPLE LOCATIONS

Sample locations and depths are based on both a combination of systematic grid/random approach and biased sampling at the random boring locations. A minimum of ten samples will be collected from the stockpiles; other samples may be collected from the soil cores, depending on field beta/gamma and photoionization detector (PID) readings (see Section 2.3.3.). Additional surface soil samples may be collected based on scanning results from the NaI and HPGe detector systems (see Section 3.0).

A systematic approach was used to establish a sample grid over the stockpile surface. The grid pattern was based on surface area and consists of three grid blocks on HIS-008 and A3A-006 and 4 grid blocks on BPW-005 of approximately equal size. A primary random sample location (northing and easting coordinate) and depth interval was selected within each block as shown on Figures 2-1 through 2-3. Secondary random sample locations and depths were also selected in the event that the primary sample cannot be taken. The primary and secondary random sample and depth intervals are presented in

Appendix D. Sample locations will be surveyed (northing, easting, and elevation) and that information will be recorded.

2.3 SAMPLE COLLECTION METHODS

Samples will be collected using the Geoprobe® Model 5400 in accordance with procedure EQT-06, Geoprobe® Model 5400 B Operation and Maintenance, where locations support the safe operation of the Geoprobe® vehicle. Otherwise, hand augering or direct-push liner sampling will be conducted, in accordance with procedure SMPL-01, Solids Sampling. At each sampling location, the surface vegetation within a 6-inch radius of the sample point will be removed using a stainless steel trowel or by hand with clean nitrile gloves while taking care to minimize the removal of any soil.

Soil samples will be collected from the 1-foot intervals identified in Appendix D. If additional volume is necessary, the sample interval may be extended an additional 6 inches. If this is not possible (e.g., samples interval is at the bottom of the boring), then additional cores will be collected. The sample depth intervals will be recorded on the appropriate field documentation.

All borings will be taken completely through the soil pile, from the surface of the pile to a depth of 1 foot below the base of the pile, for field screening purposes. Estimated boring depths for each sample location are listed in Appendix D. If the primary random sample location cannot be collected, the secondary random sample location will be selected. If refusal or resistance is encountered during the secondary soil boring location, additional borings within a 3-foot radius will be attempted to collect the specified samples. If this is necessary, borings will not be moved across grid lines. All encounters with subsurface debris will be noted in the field log in order to characterize the pile for debris content. All debris will be discarded from the sample volume. Disposition of excess soil and decontamination water will be determined by the Field Sampling Lead and the WAO stockpile contact.

2.3.1 Geoprobe® Methods

A Geoprobe® Macro-Core sampler will be advanced in approximately 12 to 48-inch increments to collect the target depth intervals for the soil samples specified in Appendix D. The Macro-Core collects a 1.5-inch diameter soil core. Multiple cores may be collected at each sampling location (not to exceed 1 foot apart) to obtain sufficient sample volume for analysis or if complete sample recovery is not obtained. Borehole collapse will be monitored during core sampling to ensure minor sidewall slough is accounted for during coring and sample collection. If significant borehole collapse occurs, a closed-tube, piston-type core sampler (Macro-Core) will be employed which is closed during advancement to the sample interval, then opened to collect the discrete interval of interest. The Macro-Core sampling method will utilize a disposable plastic liner insert in which the soil core is recovered.

2.3.2 Manual Sampling Methods

If Geoprobe® accessibility is not possible, soil samples will be collected using a hand auger (typically 3-inch diameter) or other methods in specified in SMPL-01. The hand auger will be advanced in approximately 1-foot increments down to the target depth intervals for the soil samples specified in Appendix D. As with core sampling, multiple holes at one sampling location (not to exceed 1 foot apart) may have to be augered to obtain sufficient volume for laboratory analysis. Borehole collapse will be monitored during core sampling to ensure sidewall slough is accounted for during augering and sample collection. The borehole will be manually collapsed following sample collection to eliminate the possibility of injury to workers. For shallow borings or surface samples, a direct-push liner may be used. Surface samples may be required as a result of real-time radiological scanning, as discussed in Section 3.0.

2.3.3 Biased Sample Selection

Each boring location will be screened for volatile organic compounds (VOCs) using a PID and for radionuclides using a beta/gamma (Geiger-Mueller) survey meter. Any concrete and debris will be removed from the samples to the extent practical prior to screening.

The entire length of each boring will be screened using a PID. For hand auger borings, each 1-foot push will be placed in a clean tray prior to PID screening. For Geoprobe® cores, the core liners will be opened for PID screening. Any 1-foot sample interval with an above-background reading on the PID will be subjected to a headspace analysis in accordance with procedure EQT-04, Photoionization Detector. If the result of the headspace analysis is above 10 parts per million (ppm), the 1-foot sample interval will be submitted for total VOC analysis. If the entire boring is below background on the initial PID screening or if all headspace analysis results are less than 10 ppm, no biased sample will be collected from that boring for VOC analysis. If four or more consecutive 1-foot intervals have head-space analysis results above 10 ppm, the following samples will be sent to the lab:

- The shallowest and deepest samples that exceeded 10 ppm head-space analysis in order to bound the area
- The sample between the two bounding samples with the highest concentration from the head-space analysis
- If the samples between the two bounding intervals have the same head-space analysis results, randomly choose an interval.

If biased VOC samples are being collected from a boring and if the designated random sample interval is not above background on the PID scan or does not exceed 10 ppm head-space analysis, the biased sample interval will replace the random interval for total VOC analysis only. All other analytes will be collected from the designated random sample interval.

The entire length of the soil core, or the cuttings in the case of augering, will be surveyed to determine the intervals with beta/gamma readings above 400 corrected counts per minute (ccpm). The identified 1-foot intervals will be sampled and analyzed for total uranium only. If the entire soil core is found to be less than 400 ccpm, then no high-biased sample will be collected from that boring for total uranium analysis [Target Analyte List (TAL) B]. Archive samples will be collected from the 1-foot intervals above and below any sample intervals that are above 400 ccpm. If the interval above or below is already designated for sampling, then no additional archive sample will be necessary in that direction. In the event that biased sample intervals are above the total uranium WAC, the archive samples may be submitted for analysis in an attempt to vertically bound the contamination. Excess sample material collected for analysis and archive purposes will be returned to the stockpiles prior to completion of the soil pile excavation. All biased samples and associated analysis will be documented in a Variance/Field Change Notice (V/FCN).

2.3.4 Soil Sample Processing and Analysis

The Geoprobe® soil cores will be laid out on clean plastic, and the appropriate sample intervals will be separated from the core to obtain the necessary samples. Any debris (e.g., wood, concrete, metal) contained in a sample interval will be removed from the sample in the field. For hand augering sampling locations, the soil cuttings collected from the target sample interval will be placed in a clean tray prior to transfer to a sample container so that the interval can be screened with a PID as described in Section 2.3.3. VOC samples from hand augering locations will be immediately placed in the sample container following screening. Sample volume and analysis information is summarized in Table 2-1.

Samples to be analyzed for radiological constituents and TCLP metals will be sent to the on-site laboratory for analysis. The VOC, SVOC, pesticide, TCLP VOC, and TCLP SVOC/pesticide/herbicide samples will be sent to the Sample Processing Laboratory, where they will be prepared for shipment to an approved off-site laboratory. One alpha/beta screening sample will be collected and analyzed on site for any sample interval being sent off site for analysis. The laboratories will analyze the samples for the appropriate TAL, as identified in Appendix B.

2.4 SAMPLE IDENTIFICATION

All physical soil samples collected for laboratory analysis will be assigned a unique sample identifier, as listed in Appendix D. This identifier will consist of a prefix designating the area name (HIS-008, A3A-006, or BPW-005) followed by the sample point number (1 through x), followed by a depth interval (one for a sample beginning at 0 feet, two for a sample beginning at 0.5 feet, etc.) followed by a letter designating the type of sample ("R" for radionuclides, "L" for VOCs, "S" for SVOCs, "P" for pesticides, "TL" for TCLP VOC, "TS" for TCLP SVOC, pesticide, and herbicide, "TM" for TCLP metals, and "AB" for alpha/beta). For example:

> HIS-008-2-5-P is the sample collected from 2 to 3 feet below the surface at sample point 2 in HIS-008 and is being analyzed for pesticides.

Biased samples collected as a result of PID and beta/gamma surveys will have a "B" inserted after the depth interval. For example:

> HIS-008-2-8-B-R is a biased sample collected from 3.5 to 4 feet below the surface at sample point 2 in HIS-008 and is being analyzed for radionuclides.

Any archive samples collected will be assigned a "V" suffix (e.g., HIS-008-2-8-B-R-V) to designate an archive. Trip blanks will be labeled with the area name and the suffix "TB." For example, HIS-008-TB2 is the second trip blank from HIS-008.

If a boring location requires multiple borings due to subsurface refusal, or if a boring is moved after attempting the original location, the boring grid identifier will be designated with an alphabetic suffix (e.g., 7A, 7B, etc.) Therefore, a random sample collected during the third attempt at sample point 2 at HIS-008 would be HIS-008-2C-5-R.

2.5 EQUIPMENT DECONTAMINATION

Sampling equipment will be decontaminated before transporting to the sampling site. Additionally, equipment that comes into contact with sample media at the target sample interval must be decontaminated, including the core sampler cutting shoe, hand auger buckets, and other sample collection tools. All decontamination will be Level II decontamination as specified in SMPL-01. The core barrel portion of the core sampler will be wiped down between sample intervals and locations to remove visible soil or material. Decontamination of the core barrel will not be necessary because the core barrel will not come into contact with the sample when using a liner insert.

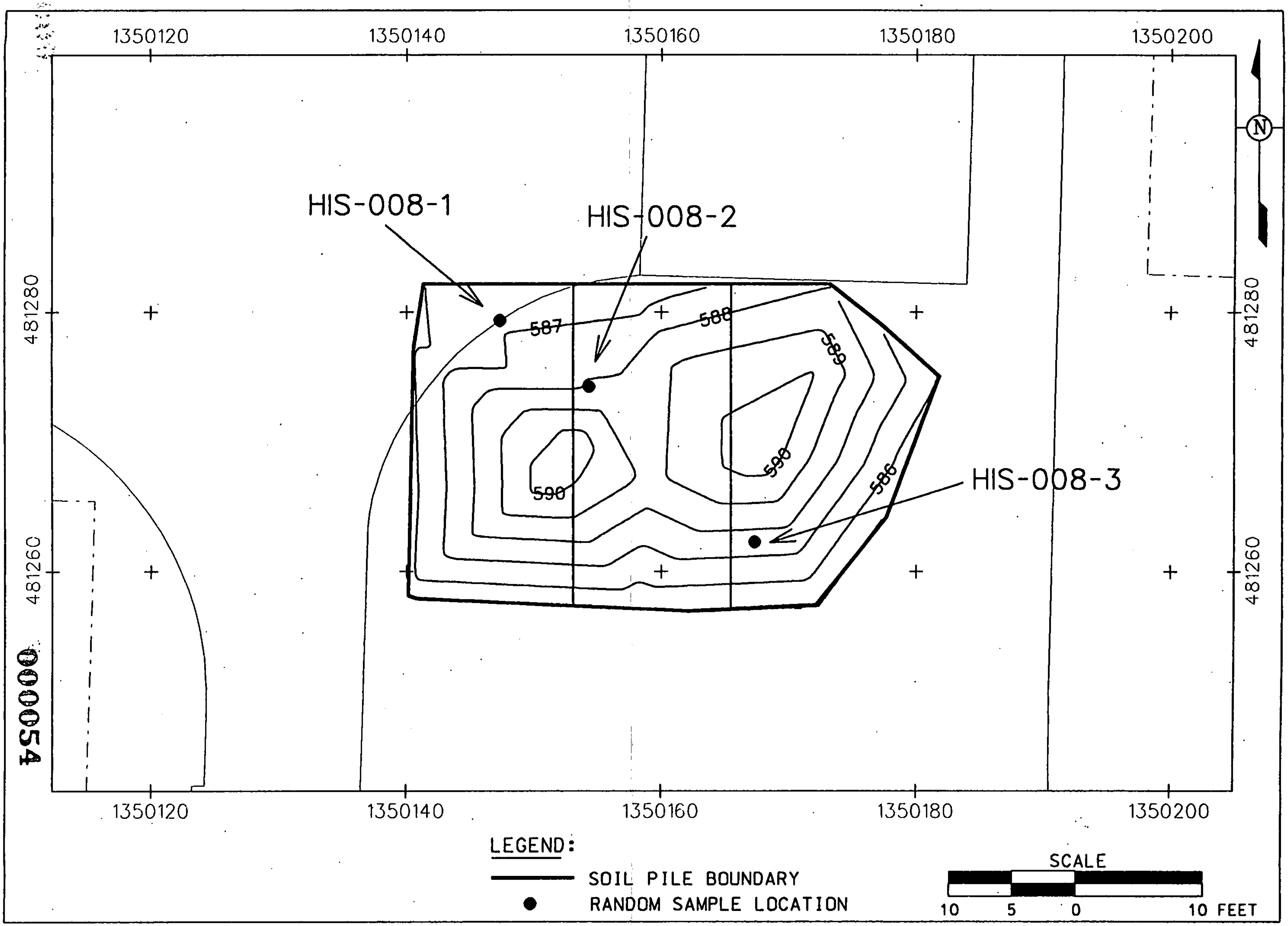
2.6 SAMPLE HANDLING AND SHIPPING

Samples will be processed in accordance with SMPL-01, to ensure that samples are documented properly and custody and sample integrity are maintained. All samples will be transported from the field to the on-site Sample Processing Laboratory.

TABLE 2-1
SAMPLING AND ANALYTICAL REQUIREMENTS

Analyte	Sample Matrix	Lab	ASL	Preserve	Holding Time	Container	Required Sample Mass
Total Uranium Technetium-99 (TALs A and B)	Solid	On-site	B	None	12 months	250-mL widemouth glass	40g
Total VOCs (TAL C)	Solid	Off-site	B	Cool to 4°C	14 days	60-mL Septa widemouth glass with Teflon-lined lid	fill container to top (no head space)
Total SVOCs (TAL D)	Solid	Off-site	B	Cool to 4°C	14 days	120-mL Septa widemouth glass with Teflon-lined lid	Fill container
Total Pesticides (TAL E)	Solid	Off-site	B	Cool to 4°C	14 days	120-mL widemouth glass with Teflon-lined lid	90g
TCLP VOCs (TAL F)	Solid	Off-site	B	Cool to 4°C	14 days	60-mL glass with Teflon-lined lid	fill container to top (no head space)
TCLP SVOCs/ Pesticides/ Herbicides (TAL G)	Solid	Off-site	B	Cool to 4°C	14 days	8-oz. glass with Teflon-lined lid	300g*
TCLP Metals (TAL H)	Solid	On-site	B	Cool to 4°C	6 months	250-mL glass with Teflon-lined lid	200g
Alpha/Beta Screen	Solid	On-site	N/A	None	None	Any container	10g
Trip Blank	Liquid	Off-site	B	Cool to 4°C; pH <2 by HCl or H_2SO_4	14 days	3 x 40-mL glass with Teflon-lined lid	fill to top
Archive	Solid	N/A	N/A	None	12 months	250-mL widemouth glass	N/A

* One sample will require 900 grams for laboratory QC analysis.
Note: Off-site samples will be recorded on a separate Chain of Custody form from the on-site samples.

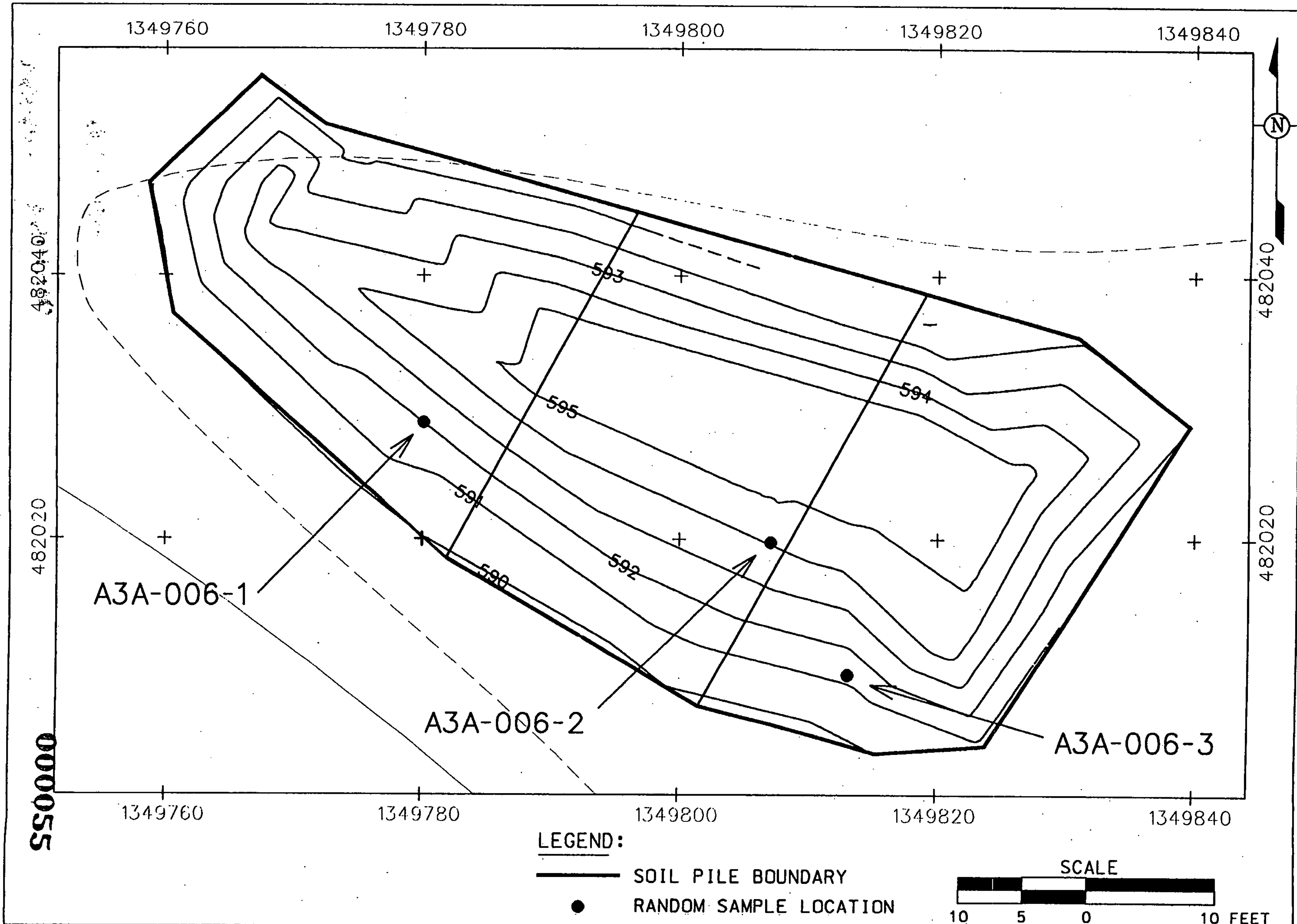


v:#5oj31#dgn#bmp#3a_002.dgn
STATE PLANAR COORDINATE SYSTEM 1983

02-MAY-2000

FIGURE 2-1. SAMPLING LOCATIONS FOR HIS-008

000054

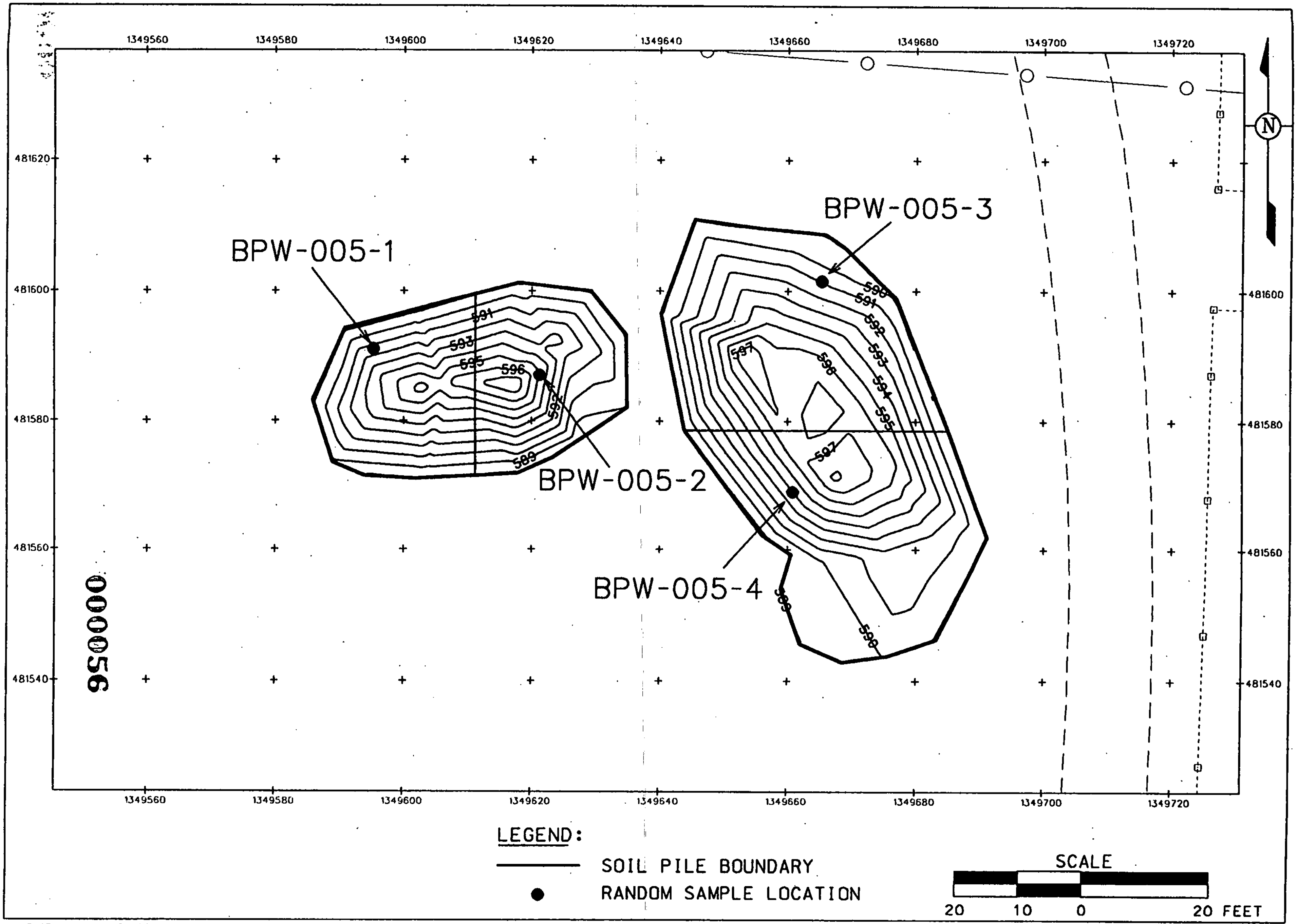


v:\5cj31\dgn\bmp\3a_003.dgn
STATE PLANAR COORDINATE SYSTEM 1983
02-MAY-2000

FIGURE 2-2. SAMPLING LOCATIONS FOR A3A-006

000055

3404



v:#5cj31#dgn#bmp#3a_004.dgn
STATE PLANAR COORDINATE SYSTEM 1983

02-MAY-2000

FIGURE 2-3. SAMPLING LOCATIONS FOR BPW-005

3.0 REAL-TIME RADIOLOGICAL SCANNING

The real-time WAC investigation of surface soil total uranium contamination in stockpiles HIS-008, A3A-006, and BPW-005 will be performed to cover as much of the stockpile surface as practical using the HPGe portable detectors or a mobile NaI detector, referred to as the Radiation Measurement System (RMS). The RMS can be the Radiation Tracking System (RTRAK), the Radiation Scanning System (RSS), or the Gator. The final aerial coverage will be documented and reported upon completion of the real-time measurement scanning.

Real-time data gathered during this activity will be reported on an IIMS Data Group Form (FS-F-5157). The Characterization Lead and WAO representatives or designees will complete this form for each real-time measurement. The original forms and color maps will be placed in the WAO files.

3.1 RADIATION MEASUREMENT SYSTEM SCANNING COVERAGE

Real-time NaI detector system coverage using the RMS will be limited to safely accessible surfaces and will be as extensive as possible without jeopardizing worker safety. The real-time field team, supervisor, and project health and safety representative will jointly determine which areas are accessible based on field conditions at the time of measurements.

The spectral acquisition time for the NaI detector will be set to 4 seconds and the data will be collected at a vehicle speed of 1 mile per hour. The onboard Global Positioning System (GPS) will be used to obtain positioning information with each detector measurement. The RMS scan data will be reviewed to determine if any single measurement exceeds 721 milligrams per kilogram (mg/kg) total uranium, the trigger level established for NaI WAC measurements. If this trigger is exceeded, an HPGe measurement may be taken to confirm the RMS measurement, as discussed in Section 3.3.

A minimum of two Troxler® or Zeltex® Infrared Moisture Meter soil moisture measurements will be collected per acre in the area covered by the RMS. These moisture measurements are necessary because spectral data from HPGe and RMS detectors need to be adjusted to take into account the soil moisture. If a moisture measurement cannot be taken due to the surface of the stockpile being covered with gravel or other non-soil material, a default moisture value of 20 percent will be used.

3.2 HPGe DETECTOR MEASUREMENTS

The HPGe portable detector systems will be used to obtain gamma measurements in those areas that cannot be safely accessed by the RMS but are accessible to the HPGe detector (e.g., steep side slopes). The objective of the HPGe measurements is to cover the areas of the pile that were not scanned by RMS, with the goal of covering as much of the surface of the pile as possible using real-time methods.

The spectral acquisition time for the HPGe detector system will be set to 300 seconds (5 minutes). The detector height will be set at 1 meter above ground surface. All HPGe locations will be surveyed and marked. Each HPGe measurement will be identified as specified in Section 3.3. One Troxler® or Zeltex® Infrared Moisture Meter soil moisture measurement will be collected in each grid block covered by the HPGe measurements. If a moisture measurement cannot be taken, a default moisture value of 20 percent may be used.

One duplicate measurement will be taken for every 20 HPGe measurements collected for this project. The duplicate measurement will immediately follow the original measurement and will be conducted using the same detector with the same height and spectral acquisition time.

The HPGe data will be reviewed to determine if any single measurement exceeds 400 mg/kg total uranium, the trigger level established for 5-minute HPGe WAC measurements at a 1-meter height. If this trigger is exceeded, an additional HPGe measurement at a lower detector height will be taken, as discussed in Section 3.3.

3.3 DETERMINING NEED FOR ADDITIONAL HPGe MEASUREMENTS

If RMS scans or 1-meter detector height HPGe measurements are greater than trigger level concentrations, confirmation and delineation will be required. This confirmation and delineation process is documented in Section 3.4 of the User Guidelines, Measurement Strategies, and Operational Factors for Deployment of In-Situ Gamma Spectrometry at the Fernald Site (Users Manual). The circumscribed boundary of the RMS or 1-meter HPGe measurement above trigger limits will be located and marked (flags and/or stakes) on the surface of the stockpile by the Characterization and/or Survey Lead or designee. The location of the maximum activity will be identified in the field using a hand-held frisker or equivalent instrument. HPGe detectors will be used for all confirmation and delineation measurements. Confirmation measurements shall be made using detector heights of 15 cm and/or 31 cm (depending on required field of view) and a spectral acquisition time of five minutes at the suspect above-WAC location to reliably determine above-WAC boundaries. If either confirmation measurement exceeds the trigger level of 928 mg/kg, then the area exceeding the trigger level (i.e., above-WAC) shall be further delineated with the HPGe. The boundary of confirmed above-WAC material area shall be refined (delineated) using a detector height of 15 cm with a spectral acquisition time of 5 minutes on a 2-meter triangular grid covering the entire area indicated by the detection and confirmation measurements. The limits of the above-WAC area will be defined by HPGe measurements that are lower than the HPGe WAC trigger levels.

Confirming and delineating the extent of contamination with 31-cm and 15-cm HPGe measurements is at the discretion of the Characterization Lead or designee. Conditions may arise which warrant a different decision process for defining the extent of contamination (i.e., cost effectiveness, need for timely response, obvious discoloration in the soil, or other suspect above-WAC material may require physical sampling). The decision process for the unusual condition will be documented in applicable field activity logs and, if determined to be appropriate by the Characterization Lead or designee, with a V/FCN as described in Section 4.4.

Duplicate measurements will be performed in the same manner described in Section 3.2, one per 20 measurements taken.

3.4 REAL-TIME MEASUREMENT IDENTIFICATION

The data from each run of the RMS will be uniquely identified. This identifier will consist of a prefix designating the area name (HIS-008, A3A-006, or BPW-005) followed by the batch run number, which is assigned by the real-time scanning personnel. For example, HIS-008-265 would be batch run #265 on HIS-008.

Each HPGe measurement will have a unique identifier. This identifier will consist of a prefix designating the area name (HIS-008, A3A-006, or BPW-005), followed by the sample number within the area (1 through x), followed by a letter designating the type of sample ("G" for gamma). A "D" will be used to designate the duplicate measurements. For example:

HIS-008-1-G-D is the first HPGe reading taken on HIS-008 and is a duplicate measurement.

3.5 DATA MAPPING

As the measurements are acquired by the Survey and Real-Time Teams, the data will be electronically loaded into mapping software through manual file transfer or Ethernet. A set of maps and/or data summaries will be given to the Characterization Lead and WAO. Maps will be generated showing Northing (Y) and Easting (X) coordinate values (Ohio South Zone, #3402) and elevation (Z) as determined using standard survey practices and standard positioning instrumentation (electronic total stations and GPS receivers). The map will depict the following:

Surface Scan Coverage Map(s)

- RMS Location Map - showing field of view squares that are color-coded for total uranium concentration and denotes batch numbers in title.
- HPGe Location Map - showing field of view circles that are color-coded for total uranium concentration and that denotes identification number for each HPGe measurement. Also attach data printout that summarizes each HPGe measurement parameter and shows total uranium concentration.

  (Note: Both results can be shown on the same map.)

HPGe Confirmation/Delineation Map(s)

- HPGe Location Map - showing field of view circles that are color-coded for total uranium concentration and that denotes identification number for each HPGe measurement. Also attach data printout that summarizes each HPGe measurement parameter and shows total uranium concentration.

The map and/or HPGe data summary printouts will be used to provide the Characterization Lead or designee with information to determine if additional scanning, confirmation, or delineation measurements are required.

3.6 SAMPLE COLLECTION BASED ON RMS AND HPGe MEASUREMENTS

If RMS identifies an area of surface soil above the trigger level discussed in Section 3.1 and the stockpile slope prohibits the use of HPGe to confirm and delineate the potential above-WAC area, a surface soil sample (0 to 6 inches) will be collected from a location within that RMS measurement area that exhibits the highest gross beta/gamma reading based on a portable survey meter/probe. This surface soil sample will be analyzed for total uranium (TAL B). If a surface sample is collected, it will be assigned a unique sample identifier consisting of a prefix designating the area name (HIS-008, A3A-006, or BPW-005), followed by "RMS" to indicate that the sample was collected based on elevated RMS measurement, and followed by the consecutive sample point number (B1, B2, etc.) to indicate a biased sample. For example:

> HIS-008-RMS-B1 is the first biased sample collected from stockpile HIS-008 as a result of RMS measurements.

The sample location (northing and easting) will be documented on a V/FCN.

4.0 QUALITY ASSURANCE/QUALITY CONTROL REQUIREMENTS

4.1 FIELD QUALITY CONTROL SAMPLES, ANALYTICAL REQUIREMENTS, AND DATA VALIDATION

In accordance with the requirements of DQO SL-048, Revision 5 and DQO SL-055, Revision 0, the field quality control, analytical, and data validation requirements are as follows:

- All laboratory analyses will be performed at Analytical Support Level (ASL) B.
- One trip blank will be taken each day that VOC samples are collected, or one per 20 VOC samples that are collected, or one per sample transport cooler, whichever is more frequent. In addition, laboratory matrix spike and matrix spike duplicate sample volumes will be collected for each VOC release or one per 20 VOC samples that are collected, whichever is more frequent.
- All ASL B field data will be validated. All analytical data will require a certificate of analysis and 10 percent of the analytical data will also require the associated quality assurance/quality control results. A minimum of 10 percent of the analytical data from each laboratory will be validated to ASL B.
- Real-time measurements will be performed at ASL A.
- One in 20 HPGe measurements will require a duplicate.

If any sample collection or analysis methods are used that are not in accordance with the SCQ, the Project Manager and Characterization Lead must determine if the qualitative data from the samples will be beneficial to predesign decision making. If the data will be beneficial, the Project Manager and Characterization Lead will ensure that:

- The PSP is revised to include references confirming that the new method is sufficient to support data needs,
- variations from the SCQ methodology are documented in the PSP, or
- data validation of the affected samples is requested or qualifier codes of J (estimated) and R (rejected) be attached to detected and nondetected results, respectively.

4.2 APPLICABLE PROCEDURES, DOCUMENTS, AND MANUALS

To assure consistency and data integrity, field activities in support of this PSP will follow the requirements and responsibilities outlined in controlled procedures and manufacturer operational manuals. Applicable procedures and manuals include:

- SMPL-01, Solids Sampling
- SMPL-21, Collection of Field Quality Control Samples
- EQT-04, Photoionization Detector
- EQT-05, Geodimeter® 4000 Survey System B Operation, Maintenance, and Calibration
- EQT-06, Geoprobe® Model 5400 Operation and Maintenance Manual
- EQT-22, Characterization of Gamma Sensitive Detectors
- EQT-23, Operation of ADCAM Series Analyzers with Gamma Sensitive Detectors
- EQT-32, Troxler® 3440 Series Surface Moisture/Density Gauge -- Calibration, Operation, and Maintenance
- EQT-33, Real-Time Differential Global Positioning System Operation
- EQT-39, Zeltex® Infrared Moisture Meter
- EQT-41, Radiation Measurement Systems
- EW-1023, Management of Stockpiles
- 34-10-501, Shipping Samples to Off-Site Laboratories
- Sitewide CERCLA Quality Assurance Project Plan (SCQ)
- Sitewide Excavation Plan
- WAC Attainment Plan for the OSDF
- User Guidelines, Measurement Strategies, and Operational Factors for Deployment of In-Situ Gamma Spectrometry at the Fernald Site (Users Manual)

4.3 PROJECT REQUIREMENTS FOR INDEPENDENT ASSESSMENTS

Project management has ultimate responsibility for the quality of the work processes and the results of the sampling activities covered by this PSP. The Quality Assurance (QA) organization may conduct independent assessments of the work process and operations to assure the quality of performance. Assessment will encompass technical and procedural requirements of this PSP and the SCQ. Independent assessments will be performed by conducting a surveillance. Surveillances will be planned and documented according to Section 12.3 of the SCQ.

4.4 IMPLEMENTATION OF FIELD CHANGES

If field conditions require changes or variances, the Field Sampling Lead must obtain written or verbal approval (electronic mail is acceptable) from the Characterization Lead, QA, and WAO before the changes may be implemented. If the change involves real-time scanning, the Real-Time Lead must also give written or verbal approval before the change can be implemented. Changes to the PSP will be noted in the applicable Field Activity Logs and on a V/FCN. QA must receive the completed V/FCN, which includes the signatures of the Characterization Lead, Sampling Lead, Project Manager, WAO, QA, and Real-Time Lead (as necessary) within seven working days of implementation of the change.

5.0 HEALTH AND SAFETY

The Health and Safety Lead, Field Sampling Leads, and team members will assess the safety of performing sampling activities on the surface of the stockpiles. This will include vehicle positioning limitations, slips/trips/falls hazards, and vehicle stability if Geoprobe® or real-time scanning work is performed on the side slopes of the pile.

Technicians will conform to precautionary surveys performed by personnel representing the Radiological Control, Safety, and Industrial Hygiene organizations. All work on this project will be performed in accordance with applicable Environmental Monitoring procedures, RM-0020 (Radiological Control Requirements Manual), RM-0021 (Safety Performance Requirements Manual), Fluor Fernald work permit, Radiological Work Permit (RWP), penetration permits, and other applicable permits. Concurrence with applicable safety permits (indicated by the signature of each field team member assigned to this project) is required by each team member in the performance of their assigned duties.

The Field Sampling Lead will ensure that each technician performing sampling related to this project has been trained to the relevant sampling procedures including safety precautions. Technicians who do not sign project safety and technical briefing forms will not participate in the execution of sampling activities related to the completion of assigned project responsibilities. A copy of applicable safety permits/surveys issued for worker safety and health will be posted at each stockpile during sampling activities.

A safety briefing will be conducted prior to the initiation of field activities. **All emergencies shall be reported immediately on extension 911, or to the Site Communications Center at 648-6511 (if using a cellular phone), or using a radio and contacting "CONTROL" on Channel 11.**

6.0 DATA MANAGEMENT

A data management process will be implemented so information collected during the investigation will be properly managed to satisfy data end use requirements after completion of the field activities. As specified in Section 5.1 of the SCQ, sampling teams will describe daily activities on a Field Activity Log, which should be sufficiently detailed to allow accurate reconstruction of the events at a later date without reliance on memory. Sample Collection Logs will be completed according to protocol specified in Appendix B of the SCQ and in applicable procedures. These forms will be maintained in loose-leaf form and uniquely numbered following the field sampling event. At least weekly, a copy of all field logs will be sent to the Characterization Lead.

Samples will be assigned a unique sample identifier, as explained in Sections 2.4 and 3.4 and listed in Appendix D. This unique sample identifier will appear on the Sample Collection Log and Chain of Custody/Request for Analysis and will be used to identify the samples during analysis, data entry, and data management.

Technicians will review all field data for completeness and accuracy and then forward all data packages to the Data Validation Contact for final review. The field data package will be filed in the records of the Environmental Management Project. All field data packages will be validated. QA will perform validation on at least 10 percent of ASL B data packages, as designated by the Characterization Lead.

All field measurements, observations, and sample collection information associated with physical sample collection will be recorded, as applicable, on the Sample Collection Log, the Field Activity Log, and the Chain of Custody/Request for Analysis Form as required. The method of sample collection will be specified in the Field Activity Log. Borehole Abandonment Logs will not be required. The PSP number will be on all documentation associated with these sampling activities.

The Real-Time Instrumentation Measurement Program (RTIMP) group will provide hard copy maps and/or summary reports to the Characterization Lead and Data Management Contact or designees. All Real-Time data will be collected and reported at a minimum ASL A and require no data validation. All physical samples and RTIMP confirmation/delineation measurements will be collected and reported at ASL B and will require 10 percent data validation. All electronically recorded field data will have the

RMS or HPGe Data Verification Checklist (Section 5.4 of the Users Manual), which will be completed after each data collection event. Field documentation, such as the Nuclear Field Density/Moisture Worksheet, will undergo an internal review by the RTIMP.

Electronically recorded data from the GPS, HPGe, and RMS systems will be downloaded on a daily basis to disks, or to the Local Area Network (LAN) using the ethernet connection. The Characterization Lead or designee will be informed by the RTIMP Lead or designee when RTIMP equipment measurements do not meet data quality control checklist criteria. The Characterization Lead or designee will determine whether additional scanning, confirmation, or delineation measurements are required.

Once the survey and real-time electronic data have been placed on the LAN and Sitewide Environmental Database (SED), the Data Management Contact will perform an evaluation prior to placement on the Soil and Disposal Facility Project (SDFP) website. The evaluation may involve a comparison check between the electronic data, hard copy maps and summary reports for accuracy and completeness. The evaluation will be documented on the Real-Time Electronic Data Quality Control checklist, dated, and signed.

The Data Management organization will perform data entry into the SED. Field logs will be maintained in loose-leaf form during the field recording activities. Analytical data from the off-site laboratory will be reviewed by the Project Lead prior to entry or transfer of the data to the SED from the Fernald Analytical Customer Tracking System (FACTS) database. The analytical data validation requirements are outlined in Section 4.1. After the analytical and real-time data are in the SED, the Data Group Form (FS-F-5157) will be completed by the Characterization Lead with concurrence from a WAO representative.

APPENDIX A

DATA QUALITY OBJECTIVES
SL-048, REV. 5 AND SL-055, REV. 0

3404

Control Number ___________

Fernald Environmental Management Project

Data Quality Objectives

Title: Delineating the Extent of Constituents of Concern During Remediation Sampling

Number: SL-048

Revision: 5

Effective Date: February 26, 1999

Contact Name: Eric Kroger

Approval: (signature on file) Date: 2/25/99
James E. Chambers
DQO Coordinator

Approval: (signature on file) Date: 2/26/99
J.D. Chiou
SCEP Project Director

Rev. #	0	1	2	3	4	5	6
Effective Date:	9/19/97	10/3/97	4/15/98	6/17/98	7/14/98	2/26/99	

DATA QUALITY OBJECTIVES

Delineating the Extent of Constituents of Concern During Remediation Sampling

Members of Data Quality Objectives (DQO) Scoping Team

The members of the DQO team include a project lead, a project engineer, a field lead, a statistician, a lead chemist, a sampling supervisor, and a data management lead.

Conceptual Model of the Site

Media is considered contaminated if the concentration of a constituent of concern (COC) exceeds the final remediation levels (FRLs). The extent of specific media contamination was estimated and published in the Operable Unit 5 Feasibility Study (FS). These estimates were based on kriging analysis of available data for media collected during the Remedial Investigation (RI) effort and other FEMP environmental characterization studies. Maps outlining contaminated media boundaries were generated for the Operable Unit 5 FS by overlaying the results of the kriging analysis data with isoconcentration maps of the other constituents of concern (COCs), as presented in the Operable Unit 5 RI report, and further modified by spatial analysis of maps reflecting the most current media characterization data. A sequential remediation plan has been presented that subdivides the FEMP into seven construction areas. During the course of remediation, areas of specific media may require additional characterization so remediation can be carried out as thoroughly and efficiently as possible. As a result, additional sampling may be necessary to accurately delineate a volume of specific media as exceeding a target level, such as the FRL or the Waste Attainment Criterion (WAC). Each individual Project-Specific Plan (PSP) will identify and describe the particular media to be sampled. This DQO covers all physical sampling activities associated with Pre-design Investigations, precertification sampling, WAC attainment sampling or regulatory monitoring that is required during site remediation.

1.0 Statement of Problem

If the extent (depth and/or area) of the media COC contamination is unknown, then it must be defined with respect to the appropriate target level (FRL, WAC, or other specified media concentration).

2.0 Identify the Decision

Delineate the horizontal and/or vertical extent of media COC contamination in an area with respect to the appropriate target level.

3.0 Inputs That Affect the Decision

Informational Inputs - Historical data, process history knowledge, the modeled extent of COC contamination, and the origins of contamination will be required to establish a sampling plan to delineate the extent of COC contamination. The desired precision of the delineation must be weighed against the cost of collecting and analyzing additional samples in order to determine the optimal sampling density. The project-specific plan will identify the optimal sampling density.

Action Levels - COCs must be delineated with respect to a specific action level, such as FRLs and On-Site Disposal Facility (OSDF) WAC concentrations. Specific media FRLs are established in the OU2 and OU5 RODs, and the WAC concentrations are published in the OU5 ROD. Media COCs may also require delineation with respect to other action levels that act as remediation drivers, such as Benchmark Toxicity Values (BTVs).

4.0 The Boundaries of the Situation

Temporal Boundaries - Sampling must be completed within a time frame sufficient to meet the remediation schedule. Time frames must allow for the scheduling of sampling and analytical activities, the collection of samples, analysis of samples and the processing of analytical data when received.

Scale of Decision Making - The decision made based upon the data collected in this investigation will be the extent of COC contamination at or above the appropriate action level. This delineation will result in media contaminant concentration information being incorporated into engineering design, and the attainment of established remediation goals.

Parameters of Interest - The parameters of interest are the COCs that have been determined to require additional delineation before remediation design can be finalized with the optimal degree of accuracy.

5.0 Decision Rule

If existing data provide an unacceptable level of uncertainty in the COC delineation model, then additional sampling will take place to decrease the model uncertainty. When deciding what additional data is needed, the costs of additional sampling and analysis must be weighed against the benefit of reduced uncertainty in the delineation model, which will eventually be used for assigning excavation, or for other purposes.

6.0 Limits on Decision Errors

In order to be useful, data must be collected with sufficient areal and depth coverage, and at sufficient density to ensure an accurate delineation of COC concentrations. Analytical sensitivity and reproducibility must be sufficient to differentiate the COC concentrations below their respective target levels.

Types of Decision Errors and Consequences

Decision Error 1 - This decision error occurs when the decision maker determines that the extent of media contaminated with COCs above action levels is not as extensive as it actually is. This error can result in a remediation design that fails to incorporate media contaminated with COC(s) above the action level(s). This could result in the re-mobilization of excavation equipment and delays in the remediation schedule. Also, this could result in media contaminated above action levels remaining after remediation is considered complete, posing a potential threat to human health and the environment.

Decision Error 2 - This decision error occurs when the decision maker determines that the extent of media contaminated above COC action levels is more extensive than it actually is. This error could result in more excavation than necessary, and this excess volume of materials being transferred to the OSDF, or an off-site disposal facility if contamination levels exceed the OSDF WAC.

True State of Nature for the Decision Errors - The true state of nature for Decision Error 1 is that the maximum extent of contamination above the FRL is more extensive than was determined. The true state of nature for Decision Error 2 is that the maximum extent of contamination above the FRL is not as extensive as was determined. Decision Error 1 is the more severe error.

7.0 Optimizing Design for Useable Data

7.1 Sample Collection

A sampling and analytical testing program will delineate the extent of COC contamination in a given area with respect to the action level of interest. Existing data, process knowledge, modeled concentration data, and the origins of contamination will be considered when determining the lateral and vertical extent of sample collection. The cost of collecting and analyzing additional samples will be weighed against the benefit of reduced uncertainty in the delineation model. This will determine the sampling density. Individual PSPs will identify the locations and depths to be sampled, the sampling density necessary to obtain the desired accuracy of the delineation, and if samples will be analyzed by the on-site or off-site laboratory. The PSP will also identify the sampling increments to be selectively analyzed for concentrations of the COC(s) of interest, along with field work requirements. Analytical requirements will be listed in the PSP. The chosen analytical methodologies are able to achieve a detection limit capable of resolving the COC action level. Sampling of groundwater monitoring wells may require different purge requirements than those stated in the SCQ (i.e., dry well definitions or small purge volumes). In order to accommodate sampling of wells that go dry prior to completing the purge of the necessary well volume, attempts to sample the monitoring wells will be made 24 hours after purging the well dry. If, after the 24 hour period, the well does not yield the required volume, the analytes will be collected in the order stated in the applicable PSP until the well goes dry. Any remaining analytes will not be collected. In some instances, after the 24 hour wait the well may not yield any water. For these cases, the well will be considered dry and will not be sampled.

7.2 COC Delineation

The media COC delineation will use all data collected under the PSP, and if deemed appropriate by the Project Lead, may also include existing data obtained from physical samples, and if applicable, information obtained through real-time screening. The delineation may be accomplished through modeling (e.g. kriging) of the COC concentration data with a confidence limit specific to project needs that will reduce the potential for Decision Error 1. A very conservative approach to delineation may also be utilized where the boundaries of the contaminated media are extended to the first known vertical and horizontal sample locations that reveal concentrations below the desired action level.

7.3 QC Considerations

Laboratory work will follow the requirements specified in the SCQ. If analysis is to be carried out by an off-site laboratory, it will be a Fluor Daniel Fernald approved full service laboratory. Laboratory quality control measures include a media prep blank, a laboratory control sample (LCS), matrix duplicates and matrix spike. Typical Field QC samples are not required for ASL B analysis. However the PSPs may specify appropriate field QC samples for the media type with respect to the ASL in accordance with the SCQ, such as field blanks, trip blanks, and container blanks. All field QC samples will be analyzed at the associated field sample ASL. Data will be validated per project requirements, which must meet the requirements specified in the SCQ. Project-specific validation requirements will be listed in the PSP.

Per the Sitewide Excavation Plan, the following ASL and data validation requirements apply to all **soil and soil field QC samples** collected in association with this DQO:

- If samples are analyzed for Pre-design Investigations and/or Precertification, 100% of the data will be analyzed per ASL B requirements. For each laboratory used for a project, 90% of the data will require only a Certificate of Analysis, the other 10% will require the Certificate of Analysis and all associated QA/QC results, and will be validated to ASL B. Per Appendix H of the SEP, the minimum detection level (MDL) for these analyses will be established at approximately 10% of the action level (the action level for precertification is the

FRL; the action level for pre-design investigations can be several different action levels, including the FRL, the WAC, RCRA levels, ALARA levels, etc.). If this MDL is different from the SCQ-specified MDL, the ASL will default to ASL E, though other analytical requirements will remain as specified for ASL B.

- If samples are analyzed for WAC Attainment and/or RCRA Characteristic Areas Delineation, 100% of the data will be analyzed and reported to ASL B with 10% validated. The ASL B package will include a Certificate of Analysis along with all associated QA/QC results. Total uranium analyses using a higher detection limit than is required for ASL B (10 mg/kg) may be appropriate for WAC attainment purposes since the WAC limit for total uranium is 1,030 mg/kg. In this case, an ASL E designation will apply to the analysis and reporting to be performed under the following conditions:

    - all of the ASL B laboratory QA/QC methods and reporting criteria will apply with the exception of the total uranium detection limit

    - the detection limit will be ≤10% of the WAC limit (e.g., ≤103 mg/kg for total uranium).

- If delineation data are also to be used for certification, the data must meet the data quality objectives specified in the Certification DQO (SL-043).

- Validation will include field validation of field packages for ASL B or ASL D data.

All data will undergo an evaluation by the Project Team, including a comparison for consistency with historical data. Deviations from QC considerations resulting from evaluating inputs to the decision from Section 3, must be justified in the PSP such that the objectives of the decision rule in Section 5 are met.

7.4 Independent Assessment

Independent assessment shall be performed by the FEMP QA organization by conducting surveillances. Surveillances will be planned and documented in accordance with Section 12.3 of the SCQ.

7.5 Data Management

Upon receipt from the laboratory, all results will be entered into the SED as qualified data using standard data entry protocol. The required ASL B, D or E data will undergo analytical validation by the FEMP validation team, as required (see Section 7.3). The Project Manager will be responsible to determine data usability as it pertains to supporting the DQO decision of determining delineation of media

COC's.

7.6 Applicable Procedures

Sample collection will be described in the PSP with a listing of applicable procedures. Typical related plans and procedures are the following:

- Sitewide Excavation Plan (SEP)
- Sitewide CERCLA Quality Assurance Project Plan (SCQ).
- SMPL-01, *Solids Sampling*
- SMPL-02, *Liquids and Sludge Sampling*
- SMPL-21, *Collection of Field Quality Control Samples*
- EQT-06, *Geoprobe® Model 5400 Operation and Maintenance*
- EQT-23, *Operation of High Purity Germanium Detectors*
- EQT-30, *Operation of Radiation Tracking Vehicle Sodium Iodide Detection System*

Data Quality Objectives
Delineating the Extent of Constituents of Concern During Remediation Sampling

1A. Task/Description: Delineating the extent of contamination above the FRLs

1.B. Project Phase: (Put an X in the appropriate selection.)

RI [ ] FS [ ] RD [X] RA [ ] R_vA [ ] OTHER [ ]

1.C. DQO No.: SL-048, Rev. 5 DQO Reference No.:____________

---

2. Media Characterization: (Put an X in the appropriate selection.)

Air [ ] Biological [ ] Groundwater [X] Sediment [X] Soil [X]

Waste [X] Wastewater [ ] Surface water [ ] Other (specify) _____

---

3. Data Use with Analytical Support Level (A-E): (Put an X in the appropriate Analytical Support Level selection(s) beside each applicable Data Use.)

Site Characterization
A [ ] B [X] C [ ] D [X] E [X]

Risk Assessment
A [ ] B [ ] C [ ] D [ ] E [ ]

Evaluation of Alternatives
A [ ] B [ ] C [ ] D [ ] E [ ]

Engineering Design
A [ ] B [X] C [ ] D [X] E [X]

Monitoring during remediation
A [X] B [X] C [ ] D [X] E [X]

Other
A [ ] B [ ] C [ ] D [ ] E [ ]

4.A. Drivers: Remedial Action Work Plans, Applicable or Relevant and Appropriate Requirements (ARARs) and the OU2 and/or OU5 Record of Decision (ROD).

4.B. Objective: Delineate the extent of media contaminated with a COC (or COCs) with respect to the action level(s) of interest.

---

5. Site Information (Description):

6.A. Data Types with appropriate Analytical Support Level Equipment Selection and SCQ Reference: (Place an "X" to the right of the appropriate box or boxes selecting the type of analysis or analyses required. Then select the type of equipment to perform the analysis if appropriate. Please include a reference to the SCQ Section.)

1. pH [X] *
   Temperature [X] *
   Specific Conductance [X] *
   Dissolved Oxygen [X] *
   Technetium-99 [X] *
2. Uranium [X] *
   Full Radiological [X] *
   Metals [X] *
   Cyanide [ ]
   Silica [ ]
3. BTX [ ]
   TPH [ ]
   Oil/Grease [ ]
4. Cations [ ]
   Anions [ ]
   TOC [ ]
   TCLP [X] *
   CEC [ ]
5. VOA [X] *
   BNA [X] *
   Pesticides [X] *
   PCB [X] *
   COD [ ]
6. Other (specify)

*If constituent is identified for delineation in the individual PSP.

6.B. Equipment Selection and SCQ Reference:

Equipment Selection		Refer to SCQ Section
ASL A		SCQ Section:
ASL B	X	SCQ Section: App. G Tables G-1&G-3
ASL C		SCQ Section:
ASL D	X	SCQ Section: App. G Tables G-1&G-3
ASL E	X (See sect. 7.3, pg. 6)	SCQ Section: App. G Tables G-1&G-3

7.A. Sampling Methods: (Put an X in the appropriate selection.)

Biased [X] Composite [ ] Environmental [X] Grab [X] Grid [X]

Intrusive [X] Non-Intrusive [ ] Phased [ ] Source [ ]

DQO Number: SL-048, Rev. 5

7.B. Sample Work Plan Reference: This DQO is being written prior to the PSPs.

Background samples: OU5 RI

7.C. Sample Collection Reference:

Sample Collection Reference: SMPL-01, SMPL-02, EQT-06

---

8. Quality Control Samples: (Place an "X" in the appropriate selection box.)

8.A. Field Quality Control Samples:

Trip Blanks	[X]*	Container Blanks	[X]++
Field Blanks	[X]+	Duplicate Samples	[X]***
Equipment Rinsate Samples	[X]***	Split Samples	[X]**
Preservative Blanks	[ ]	Performance Evaluation Samples	[ ]
Other (specify)			

- * For volatile organics only
- ** Split samples will be collected where required by EPA or OEPA.
- *** If specified in PSP.
- \+ Collected at the discretion of the Project Manager (if warranted by field conditions)
- \+ + One per Area and Phase Area per container type (i.e. stainless steel core liner/plastic core liner/Geoprobe tube).

8.B. Laboratory Quality Control Samples:

Method Blank	[X]	Matrix Duplicate/Replicate	[X]
Matrix Spike	[X]	Surrogate Spikes	[ ]
Tracer Spike	[ ]		

Other (specify) Per SCQ

9. Other: Please provide any other germane information that may impact the data quality or gathering of this particular objective, task or data use.

Control Number ________

Fernald Environmental Management Project

Data Quality Objectives

Title: Real-Time Excavation Monitoring For Total Uranium Waste Acceptance Criteria (WAC)

Number: SL-055

Revision: 0

Final Draft: 6/8/99

Contact Name: Joan White

Approval: ______________________ Date: 6/8/99
James E. Chambers
DQO Coordinator

Approval: ______________________ Date: 6/8/99
Joan White
Real-Time Instrumentation Measurement
Program Manager

Rev. #	0						
Effective Date:	6/8/99						

DATA QUALITY OBJECTIVES
Excavation Monitoring for Total Uranium Waste Acceptance Criteria (WAC)

Members of Data Quality Objectives (DQO) Scoping Team
The members of the scoping team included individuals with expertise in QA, analytical methods, field construction, statistics, laboratory analytical techniques, waste management, waste acceptance, data management, and excavation monitoring.

Conceptual Model of the Site
Fernald Environmental Management Project (FEMP) remediation includes the construction of an on-site disposal facility (OSDF) to be used for the safe permanent disposal of materials at or above the site final remediation levels (FRLs), but below the waste acceptance criteria (WAC) for constituents of concern (WAC COCs). The WAC concentrations for several constituents, including total uranium, were developed using fate and transport modeling, and were established to prevent a breakthrough of unacceptable levels of contamination (greater than a specified Maximum Contaminant Level to the underlying Great Miami Aquifer) over a 1000-year period of OSDF performance. The WAC for total uranium and other area-specific WAC COCs as referenced in the Operable Unit 5 (OU5) and Operable Unit 2 (OU2) Records Of Decision (RODs), the Waste Acceptance Plan for the On-Site Disposal Facility (WAC Plan), and the OSDF Impacted Materials Placement Plan (IMPP), must be achieved for all soil and soil-like materials that have been identified for disposal in the OSDF.

The extent of soil contamination requiring remediation was estimated and published in both the Operable Unit 5 and Operable Unit 2 Feasibility Studies (FS). These estimates were based on modeling analysis of available uranium data from soil samples collected during the Remedial Investigation (RI) efforts and from other environmental studies conducted at the FEMP. Maps outlining boundaries of soil contamination were generated for both the Operable Unit 5 and Operable Unit 2 FS documents by overlaying the results of the modeling analysis of uranium data with isoconcentration maps of other COCs. The soil contamination maps were further modified by conducting spatial analysis on the most current soil characterization data.

A sequential remediation plan has been presented which subdivides the FEMP into ten (10) independent remediation areas. Extensive historical sampling has demonstrated that in each of these 10 areas potentially above-WAC concentrations may not be present, may be limited to one WAC COC, or consist of a subset of WAC COCs. According to the Sitewide Excavation Plan (SEP) only WAC COCs with a demonstrated or likely presence in an area will be evaluated during remedial design and implementation. This DQO will be used to define the WAC decision-making process using excavation monitoring instrumentation in areas where soil and soil-like material is being excavated and total uranium is a WAC COC.

1.0 Statement of Problem

Adequate information must be available to demonstrate excavated soils or soil-like material is acceptable or unacceptable for disposal in the OSDF, based on the total uranium WAC.

Available Resources

Time: WAC decision-making information of sufficient quality must be made available to the Project Manager (or designee), characterization representative, and Waste Acceptance Operations representative (decision makers) prior to excavation and disposition of soil and soil-like materials.

Project Constraints: WAC decision-making information must be collected and assimilated with existing manpower and instrumentation to support the remediation schedule. Successful remediation of applicable areas, including excavation and placement of soil and soil-like material in the OSDF, is dependent on the performance of this work.

Summary of the Problem

Excavated soil or soil-like material must be classified as either of the following:

1. Having concentrations of total uranium at or above the WAC, and therefore, unacceptable for disposal in the OSDF, or

2. Having concentrations of total uranium below the WAC, and therefore, acceptable for disposal in the OSDF.

2.0 Identify the Decision

Decision

The WAC decision-making process will result in the classification of defined soil or soil-like material volumes as either meeting or exceeding the 1,030 ppm total uranium WAC.

Possible Results

1. A defined volume of soil or soil-like material has a concentration of total uranium at or above the WAC. This material is classified as unacceptable for placement in the OSDF, and will be identified, excavated, and segregated pending off-site disposition.

2. A defined volume of soil or soil-like material has a concentration of total uranium below the total uranium WAC. This soil is classified as acceptable for placement in the OSDF and is transported directly from the excavation to the OSDF for placement.

3.0 Identify Inputs That Affect the Decision

Required Information

The total uranium WAC published in the Waste Acceptance Criteria Attainment Plan for the OSDF, historical data, pre-design investigation data, and in-situ gamma spectrometry information collected prior to and during excavation are required to determine whether a specified volume of soil or soil-like material meets or exceeds the total uranium WAC.

Source of Informational Input

The list of sitewide OSDF WAC COCs identified in the OU2 and OU5 RODs and the WAC Plan will be referenced. Historical area specific data from the Sitewide Environmental Database (SED) will also be retrieved and evaluated for both radiological and chemical WAC constituents. This information will be utilized to determine area specific WAC COCs.

Non-invasive real-time excavation monitoring in areas where total uranium is a WAC concern will involve measurements collected with mobile and/or stationary in-situ gamma spectrometry equipment. These measurements will be collected from the surface of each excavation lift prior to excavation. Information compiled from this real-time monitoring will be assimilated and reviewed by decision makers to classify lifts or sections of lifts as either acceptable or unacceptable for placement in the OSDF. These measurements may also be collected on soils exposed after the removal of suspect above WAC material to verify its removal.

Action Levels

To ensure no above WAC soil or soil-like material is sent to the OSDF, threshold values (trigger levels) have been set for NaI and HPGe Phase 1 and II measurements. These values are significantly lower than the 1030 ppm total uranium OSDF not-to-exceed (NTE) level. The WAC Phase I (detection phase) threshold value is 721 ppm total uranium for NaI instruments (31 cm detector height), and 400 ppm total uranium for the HPGe (1 meter detector height). The WAC Phase II (confirmation and delineation phase) threshold value is 928 ppm total uranium for the HPGe (31 cm and 15 cm detector heights).

Methods of Data Collection

WAC Phase 1 measurements will be collected to obtain as close to complete coverage of the areas of concern as possible using either the NaI Radiation Measurement Systems (RMS) or HPGe equipment to identify potential above WAC total uranium locations. WAC Phase II measurements will be collected with strategically placed HPGe equipment to confirm and delineate Phase I potential above WAC measurements, as needed. The project may decide not to collect Phase II measurements if the potential above WAC area boundary is discernable by visual observation (such as presence of process residue or other OSDF prohibited items, discoloration of soil or soil-like material, or other information).

The project will use the real-time WAC Phase I and Phase II data as ASL A, and will perform no data validation (however the data will be collected with ASL B quality control criteria, for real-time project internal quality control. All measurements will be performed in compliance with operating procedures identified in Section 7.5 of this DQO, the Real-Time User's Manual, and the SEP.

4.0 The Boundaries of the Situation

Spatial Boundaries

Domain of the Decision: The boundaries where excavation monitoring for total uranium will be used is limited to soils and/or soil-like material in remediation areas where total uranium is a WAC COC, excavation is planned, and material is designated for disposition in the OSDF.

Population of Soils:

Includes all at-and below-grade soil and soil-like material impacted with total uranium potentially exceeding the WAC and planned for disposition in the OSDF.

Scale of Decision Making

Areas designated for excavation will be evaluated as to whether the soil or soil-like material is below or above the OSDF WAC for total uranium. Excavation monitoring will be conducted on each excavation lift. Based on the information obtained as a result of reviewing and modeling existing data coupled with newly acquired excavation monitoring information, a decision will be made whether an individual excavation lift, or portion of a lift, meets or exceeds the OSDF WAC for total uranium.

Temporal Boundaries

Time Constraint: Real-time excavation monitoring information must be acquired and processed in time for review and use in decision making prior to excavation and disposition of excavated material. The scheduling of WAC excavation monitoring is directly tied to the excavation schedule. WAC excavation monitoring will be performed and a disposition decision made prior to excavation of each designated lift. Acquired information must be processed and reviewed by the project decision-makers prior to disposition of the lift being monitored. Time limits to complete measurements are specified in the excavation subcontracts.

Practical Considerations: Weather, moisture, field conditions, and unforseen events affect the ability to perform excavation monitoring and meet the schedule. To maintain safe working conditions, excavation and construction activities will comply with all FEMP and project specific health and safety protocols.

5.0 Develop a Logic Statement

Parameter(s) of Interest

The parameter of interest is the concentration of total uranium in soil or soil-like material designated for disposition in the OSDF.

Waste Acceptance Criteria Concentration

The OSDF WAC concentration is 1,030 ppm for total uranium in soil and soil-like materials. This concentration is considered a NTE level for OSDF WAC attainment, and no real-time measurement data point, as defined by the instrument-specific threshold values, can meet or exceed this level in material destined for the OSDF.

Decision Rules

If excavation monitoring results are below the total uranium WAC for a specified volume of soil or soil like material, then that soil is considered acceptable for final disposition in the OSDF. If monitoring results reveal concentrations at or above the total uranium WAC, as indicated by exceeding the instrument-specific threshold level, then the unacceptable soil will be delineated, removed, and segregated pending off-site disposal.

6.0 Limits on Decision Errors

Range of Parameter Limits

The area-specific total uranium soil concentrations anticipated in excavation areas will range from background levels (naturally-occurring soil concentrations) to concentrations greater than the total uranium WAC levels.

Types of Decision Errors and Consequences

Decision Error 1: This decision error occurs when the decision makers decide a specified volume of soil or soil-like material is below the WAC for total uranium, when in fact the uranium concentration in that soil is at or above the WAC. This error would result in soil or soil like material with concentrations above the WAC for total uranium being placed into the OSDF. Since the WAC is a NTE level, this error is unacceptable.

Decision Error 2: This decision error occurs when a volume of soil or soil-like material is identified as above WAC, excavated, and sent for off-site disposition when the material is actually below the WAC for total uranium. This error would result in added costs due to the unnecessary segregation and off-site disposition of material that is acceptable for disposal in the OSDF.

True State of Nature for the Decision Errors

The true state of nature for Decision Error 1 is that the actual concentration of total uranium in a volume of soil or soil-like material is greater than the WAC. The true state of nature for Decision Error 2 is that the actual concentration of total uranium in a volume of soil or soil-like material is below the WAC. Decision Error 1 is the more severe error.

7.0 Design for Obtaining Quality Data

7.1 WAC Attainment Excavation Monitoring

WAC attainment will be based on real-time excavation monitoring using the NaI and

HPGe measurement systems. Phase I (detection phase) measurements are collected with the NaI systems using a spectral acquisition time of 4 seconds, at a detector speed of 1 mile per hour (mph), and a detector height of 31 cm. These parameters achieve the required sensitivity, and are the best compromise of practical considerations such as detector speed and time in the field. In the NaI systems, the presence of thorium contamination can cause interferences which could affect total uranium concentration calculations. Uranium results associated with thorium values greater than 500 net counts per second will be reevaluated. The threshold value (trigger level) for Phase I NaI measurements is 721 ppm for total uranium (70% of the 1,030 ppm WAC concentration for soil, arrived at by agreement with the USEPA). Phase I measurements can also be collected with the HPGe systems using a spectral acquisition time of 5 minutes, and a detector height of 1 meter (the threshold value is lower than the NaI threshold value because of the larger field of view at the HPGe 1 meter detector height). (For more information reference the *RTRAK Applicability Study, 20701-RP-0003, Revision 1, May 1998).*

At the discretion of the characterization lead, Phase II confirmation and delineation measurements may be collected using the HPGe systems with a spectral acquisition time of 5 minutes at both the 31 cm and 15 cm detector heights. The HPGe detector will be placed directly over the zone of maximum activity identified by the Phase I measurements. The threshold value (trigger level) for Phase II measurements is 928 ppm for total uranium at either detector height. Lower (more conservative) threshold values may be defined in the PSP. (For more information reference the *User Guidelines, Measurement Strategies, and Operational Factors for Deployment of In-Situ Gamma Spectrometry at the Fernald Site, 20701-RP-0006, Revision A, May 8, 1998.*)

In the event the monitoring data exceeds the trigger levels (see above), the entire vertical thickness (3 $\pm$ 1 foot) of the areal extent of above-WAC material will be removed and segregated pending off-site disposal.

7.2 Interpretation of Results

The results obtained from real-time monitoring for purposes of WAC attainment will be compared to the published OSDF WAC concentration for total uranium. If results are equal to or greater than the WAC concentration (as defined by exceeding the specific threshold value level), the decision makers may take one of the following actions:

- Determine that the entire unit volume or "lift" subjected to excavation monitoring is at or above WAC and requires segregation pending off-site disposal.

- Based on adequacy of existing information (including visual inspection), excavate and segregate the portion of the lift material that is at or above WAC pending off-site disposition.

- Perform additional real-time monitoring to more accurately delineate the areal extent of above-WAC contamination. Using this information, define the extent of removal efforts to be conducted.

7.3 QC Considerations

The following data management requirements will be met prior to evaluation of acquired WAC attainment information:

1) An excavation monitoring form will be completed and reviewed in the field.

2) WAC data and decision-making information will be assigned to respective soil profiles, so characterization and tracking information can be maintained and retrieved.

3) The mobile sodium iodide systems will generate ASL level A data, with no data validation. The HPGe detectors are capable of providing either ASL level A or B data, however for WAC determination only ASL A data will be generated.

4) When using the HPGe detectors, duplicate measurements will be taken at a frequency of one in twenty measurements or one per excavation lift, whichever is greater.

7.4 Independent Assessment

Independent assessment shall be performed by the FEMP QA organization by conducting surveillances. Surveillances shall be planned and documented in accordance with Section 12.3 of the SCQ.

7.5 Applicable Procedures

Real-time monitoring performed under the PSP shall follow the requirements outlined within the following procedures:

- ADM-16, In-Situ Gamma Spectrometry Quality Control Measurements
- EQT-22, High Purity Germanium Detector In-Situ Efficiency Calibration
- EQT-23, Operation of ADCAM Series Analyzers with Gamma Sensitive Detectors
- EQT-32, Troxler 3440 Series Surface Moisture/Density Gauge

- EQT-33, Real Time Differential Global Positioning System
- EQT-39, Zeltex Infrared Moisture Meter
- EQT-40, Satloc Real-time Differential Global PositioningSystem
- EQT-41, Radiation Measurement Systems
- 20300-PL-002, Real Time Instrumentation Measurement Program Quality Assurance Plan
- EW-1022, On-Site Tracking and Manifesting of Bulk Impacted Material

7.6 References

- Sitewide CERCLA Quality Assurance Project Plan (SCQ), May 1995, FD-1000
- Sitewide Excavation Plan, July 1998, 2500-WP-0028, Revision 0
- Waste Acceptance Criteria Attainment Plan for the On-Site Disposal Facility, June 1998, 20100-PL-0014, Revision 0
- Impacted Materials Placement Plan for the On-Site Disposal Facility, January 1998, 20100-PL-007, Revision 0
- Area 2, Phase 1 Southern Waste Units Implementation Plan for Operational Unit 2, July 1998, 2502-WP-0029, Revision 0
- RTRAK Applicability Study, May 1998, 20701-RP-0003, Revision 1
- User Guidelines, Measurement Strategies, and Operational Factors for Deployment of In-Situ Gamma Spectrometry at the Fernald Site, July 1998, 20701-RP-0006 Revision B

Data Quality Objectives
Excavation Monitoring for Total Uranium Waste Acceptance Criteria (WAC)

1A. Task/Description: Waste Acceptance Criteria Monitoring

1.B. Project Phase: (Put an X in the appropriate selection.)

RI ☐ FS ☐ RD ☐ RA ☒ R$_v$A ☐ OTHER

1.C. DQO No.: SL-055 DQO Reference No.: N/A

---

2. Media Characterization: (Put an X in the appropriate selection.)

Air ☐ Biological ☐ Groundwater ☐ Sediment ☐

Soil and Soil Like Material ☒

Waste ☐ Wastewater ☐ Surface water ☐ Other (specify) ________

---

3. Data Use with Analytical Support Level (A-E): (Put an X in the appropriate Analytical Support Level selection(s) beside each applicable Data Use.)

Site Characterization
A ☐ B ☐ C ☐ D ☐ E ☐

Risk Assessment
A ☐ B ☐ C ☐ D ☐ E ☐

Evaluation of Alternatives
A ☐ B ☐ C ☐ D ☐ E ☐

Engineering Design
A ☐ B ☐ C ☐ D ☐ E ☐

Monitoring during remediation activities
A ☐ B ☐ C ☐ D ☐ E ☐

Other Waste Acceptance Evaluation
A ☒ B ☐ C ☐ D ☐ E ☐

4.A. Drivers: Specific construction work plans, Applicable or Relevant and Appropriate Requirements (ARARs) and Operable Unit 2 and Operable Unit 5 Records of Decision (ROD).

4.B. Objective: To provide data for identification of soils and soil-like materials for compliance with Waste Acceptance Criteria.

5. Site Information (Description):

The RODs specify that FEMP soils will be below the WAC for disposal in the OSDF. WAC determination will be necessary for site soils and soil like material that is scheduled for excavation and potential OSDF disposition.

6.A. Data Types with appropriate Analytical Support Level Equipment Selection and SCQ Reference: (Place an "X" to the right of the appropriate box or boxes selecting the type of analysis or analyses required. Then select the type of equipment to perform the analysis if appropriate. Please include a reference to the SCQ Section.)

1. pH	☐	2. Uranium	☒	3. BTX	☐
Temperature	☐	Full Radiological	☐	TPH	☐
Specific Conductance	☐	Metals	☐	Oil/Grease	☐
Dissolved Oxygen	☐	Cyanide	☐		
Technetium-99	☐	Silica	☐		
4.Cations	☐	5. VOA	☐	6. Other (specify)	☒
Anions	☐	BNA	☐	Moisture	
TOC	☐	Pesticides	☐		
TCLP	☐	PCB	☐		
CEC	☐				
COD	☐				

6.B. Equipment Selection and SCQ Reference:

ASL A	NaI and HPGe	SCQ Section:	Appendix H
ASL B		SCQ Section:	
ASL C		SCQ Section:	
ASL D		SCQ Section:	
ASL E		SCQ Section:	

7.A. Sampling Methods: (Put an X in the appropriate selection.)

Biased	☐	Composite	☐	Environmental	☐	Grab	☐	Grid	☐
Intrusive	☐	Non-Intrusive	☒	Phased	☐	Source	☐		

DQO Number: SL-055

7.B. Sample Work Plan Reference: The DQO is being established prior to completion of the PSP.

Background samples: SED

---

8. Quality Control Samples: (Place an "X" in the appropriate selection box.)

8.A. Field Quality Control Samples:

Trip Blanks	☐	Container Blanks	☐
Field Blanks	☐	Duplicate Measurements	☒*
Equipment Rinsate Samples	☐	Split Samples	☐
Preservative Blanks	☐	Performance Evaluation Samples	☐

Other (specify) __________

*For the HPGe detectors, duplicate measurements will be made every 1 in 20 or one per lift, whichever is greater.

8.B. Laboratory Quality Control Samples:

Method Blank	☐	Matrix Duplicate/Replicate	☐
Matrix Spike	☐	Surrogate Spikes	☐

Other (specify) Per method

9. Other: Please provide any other germane information that may impact the data quality or gathering of this particular objective, task or data use.

APPENDIX B

TARGET ANALYTE LISTS

APPENDIX B
TARGET ANALYTE LISTS

TAL 20200-PSP-0007-A

Soil Analysis - ICP/MS and GPC		
1	ASL B	Total Uranium
2	ASL B	Technetium-99

TAL 20200-PSP-0007-B

Soil Analysis - ICP/MS		
1	ASL B	Total Uranium

TAL 20200-PSP-0007-C

Soil Analysis - Total VOCs		
1	ASL B	Bromodichloromethane
2	ASL B	Chloroethane
3	ASL B	1,1-Dichloroethene
4	ASL B	1,2-Dichloroethene
5	ASL B	Tetrachloroethene
6	ASL B	Trichloroethene
7	ASL B	Vinyl Chloride

TAL 20200-PSP-0007-D

Soil Analysis - Total SVOCs		
1	ASL B	Bis(2-chloroisopropyl)ether
2	ASL B	Carbazole
3	ASL B	4-Nitroaniline

TAL 20200-PSP-0007-E

Soil Analysis – Total Pesticides		
1	ASL B	Alpha-chlordane
2	ASL B	Toxaphene

TAL 20200-PSP-0007-F

Soil Analysis - TCLP VOCs		
1	ASL B	Benzene
2	ASL B	Carbon Tetrachloride
3	ASL B	Chlorobenzene
4	ASL B	Chloroform
5	ASL B	1,1-Dichloroethene
6	ASL B	1,2-Dichloroethane
7	ASL B	2-Butanone
8	ASL B	Tetrachloroethene
9	ASL B	Trichloroethene
10	ASL B	Vinyl Chloride

000094

TAL 20200-PSP-0007-G

Soil Analysis - TCLP SVOCs, Pesticides, Herbicides		
1	ASL B	Chlordane
2	ASL B	o-Cresol
3	ASL B	m-Cresol
4	ASL B	p-Cresol
5	ASL B	2,4-D
6	ASL B	1,4-Dichlorobenzene
7	ASL B	2,4-Dinitrotoluene
8	ASL B	Endrin
9	ASL B	Heptachlor
10	ASL B	Heptachlor Epoxide
11	ASL B	Hexachlorobenzene
12	ASL B	Hexachlorobutadiene
13	ASL B	Hexachloroethane
14	ASL B	Lindane
15	ASL B	Methoxychlor
16	ASL B	Nitrobenzene
17	ASL B	Pentachlorophenol
18	ASL B	Pyridine
19	ASL B	Toxaphene
20	ASL B	2,4,5-Trichlorophenol
21	ASL B	2,4,6-Trichlorophenol
22	ASL B	2,4,5-TP (Silvex)

TAL 20200-PSP-0007-H

Soil Analysis - TCLP Metals		
1	ASL B	Arsenic
2	ASL B	Barium
3	ASL B	Cadmium
4	ASL B	Chromium
5	ASL B	Lead
6	ASL B	Mercury
7	ASL B	Selenium
8	ASL B	Silver

APPENDIX C

SUMMARY OF EXISTING DATA ON BPW-005

APPENDIX C
EXISTING DATA ON STOCKPILE BPW-005

Parameter	Result	Units	Qual	Sample ID	Sample Date	Top Depth	Bottom Depth	Northing	Easting
1,1-Dichloroethene	50	ug/kg	U	12637-14-L	11/19/99	6.5	7	481630.47	1349670.84
1,1-Dichloroethene	50	ug/kg	U	12637-20-L	11/19/99	9.5	10	481630.47	1349670.84
1,1-Dichloroethene	45.4	ug/kg	U	12637-2-L	11/19/99	0.5	1	481630.47	1349670.84
1,1-Dichloroethene	45.4	ug/kg	U	12637-8-L	11/19/99	3.5	4	481630.47	1349670.84
1,1-Dichloroethene	38	ug/kg	UNV	12553-3B-L	10/20/99	1	1.5	481127.44	1349611.23
1,1-Dichloroethene	16	ug/kg	-	056668	9/24/90	4	4.5	481107.94	1349670.73
1,1-Dichloroethene	12	ug/kg	U	121674	7/13/93	1	1.5	481396.77	1349596.16
1,1-Dichloroethene	11	ug/kg	UJ	121670	7/13/93	0	0.5	481396.77	1349596.16
1,1-Dichloroethene	11	ug/kg	U	121679	7/13/93	2.5	3	481396.77	1349596.16
1,1-Dichloroethene	11	ug/kg	U	121685	7/13/93	4.5	5	481396.77	1349596.16
1,1-Dichloroethene	6	ug/kg	U	056905	10/31/90	0.5	1	481621.03	1349517.53
1,1-Dichloroethene	6	ug/kg	U	056484	9/27/90	0.5	1	481139.24	1349502.78
1,1-Dichloroethene	6	ug/kg	U	056595	9/25/90	0.5	1	481133.83	1349644.52
1,1-Dichloroethene	6	ug/kg	U	056529	9/21/90	0.5	1	481110.16	1349642.79
1,1-Dichloroethene	6	ug/kg	UJ	056982	11/4/90	0.5	1	481587.71	1349680.95
1,1-Dichloroethene	6	ug/kg	UJ	056573	9/24/90	0.5	1	481135.55	1349611.44
1,1-Dichloroethene	6	ug/kg	U	056908	11/1/90	2	2.5	481621.03	1349517.53
1,1-Dichloroethene	6	ug/kg	U	056487	10/2/90	2	2.5	481139.24	1349502.78
1,1-Dichloroethene	6	ug/kg	U	056598	9/25/90	2	2.5	481133.83	1349644.52
1,1-Dichloroethene	6	ug/kg	U	056532	9/23/90	2	2.5	481110.16	1349642.79
1,1-Dichloroethene	6	ug/kg	U	057535	3/8/91	2	2.5	481216.91	1349510.38
1,1-Dichloroethene	6	ug/kg	UJ	056985	11/4/90	2	2.5	481587.71	1349680.95
1,1-Dichloroethene	6	ug/kg	U	056903	11/2/90	4	4.5	481666.29	1349483.48
1,1-Dichloroethene	6	ug/kg	U	056912	11/1/90	4	4.5	481621.03	1349517.53
1,1-Dichloroethene	6	ug/kg	U	056989	11/4/90	4	4.5	481587.71	1349680.95
1,1-Dichloroethene	6	ug/kg	U	056491	10/2/90	4	4.5	481139.24	1349502.78
1,1-Dichloroethene	6	ug/kg	U	056580	9/24/90	4	4.5	481135.55	1349611.44
1,1-Dichloroethene	6	ug/kg	U	056602	9/26/90	4	4.5	481133.83	1349644.52
1,1-Dichloroethene	6	ug/kg	U	056536	9/23/90	4	4.5	481110.16	1349642.79
1,1-Dichloroethene	6	ug/kg	U	056502	10/2/90	9.5	10	481139.24	1349502.78
1,1-Dichloroethene	6	ug/kg	U	056569	10/2/90	9.5	10	481138.11	1349580.59
1,1-Dichloroethene	6	ug/kg	U	056547	9/23/90	9.5	10	481110.16	1349642.79
1,1-Dichloroethene	6	ug/kg	U	056679	9/25/90	9.5	10	481107.94	1349670.73

APPENDIX C
EXISTING DATA ON STOCKPILE BPW-005

Parameter	Result	Units	Qual	Sample ID	Sample Date	Top Depth	Bottom Depth	Northing	Easting
1,1-Dichloroethene	6	ug/kg	UJ	057550	3/9/91	9.5	10	481216.91	1349510.38
1,1-Dichloroethene	5	ug/kg	U	056896	11/2/90	0.5	1	481666.29	1349483.48
1,1-Dichloroethene	5	ug/kg	U	056551	9/27/90	0.5	1	481138.11	1349580.59
1,1-Dichloroethene	5	ug/kg	U	056661	9/24/90	0.5	1	481107.94	1349670.73
1,1-Dichloroethene	5	ug/kg	U	057532	3/8/91	0.5	1	481216.91	1349510.38
1,1-Dichloroethene	5	ug/kg	J	056899	11/2/90	2	2.5	481666.29	1349483.48
1,1-Dichloroethene	5	ug/kg	U	056554	10/2/90	2	2.5	481138.11	1349580.59
1,1-Dichloroethene	5	ug/kg	U	056576	9/24/90	2	2.5	481135.55	1349611.44
1,1-Dichloroethene	5	ug/kg	U	056664	9/24/90	2	2.5	481107.94	1349670.73
1,1-Dichloroethene	5	ug/kg	U	056558	10/2/90	4	4.5	481138.11	1349580.59
1,1-Dichloroethene	5	ug/kg	U	057539	3/9/91	4	4.5	481216.91	1349510.38
1,1-Dichloroethene	5	ug/kg	U	056591	9/25/90	9.5	10	481135.55	1349611.44
1,1-Dichloroethene	5	ug/kg	U	056613	9/26/90	9.5	10	481133.83	1349644.52
1,1-Dichloroethene	5	ug/kg	UJ	057560	3/10/91	14.5	15	481216.91	1349510.38
1,2-Dichloroethene (Total)	12	ug/kg	U	121674	7/13/93	1	1.5	481396.77	1349596.16
1,2-Dichloroethene (Total)	11	ug/kg	UJ	121670	7/13/93	0	0.5	481396.77	1349596.16
1,2-Dichloroethene (Total)	11	ug/kg	U	121679	7/13/93	2.5	3	481396.77	1349596.16
1,2-Dichloroethene (Total)	11	ug/kg	U	121685	7/13/93	4.5	5	481396.77	1349596.16
1,2-Dichloroethene (Total)	6	ug/kg	U	056905	10/31/90	0.5	1	481621.03	1349517.53
1,2-Dichloroethene (Total)	6	ug/kg	U	056484	9/27/90	0.5	1	481139.24	1349502.78
1,2-Dichloroethene (Total)	6	ug/kg	U	056595	9/25/90	0.5	1	481133.83	1349644.52
1,2-Dichloroethene (Total)	6	ug/kg	U	056529	9/21/90	0.5	1	481110.16	1349642.79
1,2-Dichloroethene (Total)	6	ug/kg	UJ	056982	11/4/90	0.5	1	481587.71	1349680.95
1,2-Dichloroethene (Total)	6	ug/kg	UJ	056573	9/24/90	0.5	1	481135.55	1349611.44
1,2-Dichloroethene (Total)	6	ug/kg	U	056908	11/1/90	2	2.5	481621.03	1349517.53
1,2-Dichloroethene (Total)	6	ug/kg	U	056487	10/2/90	2	2.5	481139.24	1349502.78
1,2-Dichloroethene (Total)	6	ug/kg	U	056598	9/25/90	2	2.5	481133.83	1349644.52
1,2-Dichloroethene (Total)	6	ug/kg	U	056532	9/23/90	2	2.5	481110.16	1349642.79
1,2-Dichloroethene (Total)	6	ug/kg	U	057535	3/8/91	2	2.5	481216.91	1349510.38
1,2-Dichloroethene (Total)	6	ug/kg	UJ	056899	11/2/90	2	2.5	481666.29	1349483.48
1,2-Dichloroethene (Total)	6	ug/kg	UJ	056985	11/4/90	2	2.5	481587.71	1349680.95
1,2-Dichloroethene (Total)	6	ug/kg	U	056989	11/4/90	4	4.5	481587.71	1349680.95
1,2-Dichloroethene (Total)	6	ug/kg	U	056491	10/2/90	4	4.5	481139.24	1349502.78

000099

APPENDIX C
EXISTING DATA ON STOCKPILE BPW-005

Parameter	Result	Units	Qual	Sample ID	Sample Date	Top Depth	Bottom Depth	Northing	Easting
1,2-Dichloroethene (Total)	6	ug/kg	U	056580	9/24/90	4	4.5	481135.55	1349611.44
1,2-Dichloroethene (Total)	6	ug/kg	U	056602	9/26/90	4	4.5	481133.83	1349644.52
1,2-Dichloroethene (Total)	6	ug/kg	U	056536	9/23/90	4	4.5	481110.16	1349642.79
1,2-Dichloroethene (Total)	6	ug/kg	U	056668	9/24/90	4	4.5	481107.94	1349670.73
1,2-Dichloroethene (Total)	6	ug/kg	UJ	056903	11/2/90	4	4.5	481666.29	1349483.48
1,2-Dichloroethene (Total)	6	ug/kg	U	056502	10/2/90	9.5	10	481139.24	1349502.78
1,2-Dichloroethene (Total)	6	ug/kg	U	056569	10/2/90	9.5	10	481138.11	1349580.59
1,2-Dichloroethene (Total)	6	ug/kg	U	056547	9/23/90	9.5	10	481110.16	1349642.79
1,2-Dichloroethene (Total)	6	ug/kg	U	056679	9/25/90	9.5	10	481107.94	1349670.73
1,2-Dichloroethene (Total)	6	ug/kg	UJ	057550	3/9/91	9.5	10	481216.91	1349510.38
1,2-Dichloroethene (Total)	5	ug/kg	U	056551	9/27/90	0.5	1	481138.11	1349580.59
1,2-Dichloroethene (Total)	5	ug/kg	U	056661	9/24/90	0.5	1	481107.94	1349670.73
1,2-Dichloroethene (Total)	5	ug/kg	U	057532	3/8/91	0.5	1	481216.91	1349510.38
1,2-Dichloroethene (Total)	5	ug/kg	UJ	056896	11/2/90	0.5	1	481666.29	1349483.48
1,2-Dichloroethene (Total)	5	ug/kg	U	056554	10/2/90	2	2.5	481138.11	1349580.59
1,2-Dichloroethene (Total)	5	ug/kg	U	056576	9/24/90	2	2.5	481135.55	1349611.44
1,2-Dichloroethene (Total)	5	ug/kg	U	056664	9/24/90	2	2.5	481107.94	1349670.73
1,2-Dichloroethene (Total)	5	ug/kg	J	056912	11/1/90	4	4.5	481621.03	1349517.53
1,2-Dichloroethene (Total)	5	ug/kg	U	056558	10/2/90	4	4.5	481138.11	1349580.59
1,2-Dichloroethene (Total)	5	ug/kg	U	057539	3/9/91	4	4.5	481216.91	1349510.38
1,2-Dichloroethene (Total)	5	ug/kg	U	056591	9/25/90	9.5	10	481135.55	1349611.44
1,2-Dichloroethene (Total)	5	ug/kg	U	056613	9/26/90	9.5	10	481133.83	1349644.52
1,2-Dichloroethene (Total)	5	ug/kg	UJ	057560	3/10/91	14.5	15	481216.91	1349510.38
4-Nitroaniline	18000	ug/kg	U	056896	11/2/90	0.5	1	481666.29	1349483.48
4-Nitroaniline	10000	ug/kg	U	056899	11/2/90	2	2.5	481666.29	1349483.48
4-Nitroaniline	2100	ug/kg	UJ	056905	10/31/90	0.5	1	481621.03	1349517.53
4-Nitroaniline	2100	ug/kg	UJ	056573	9/24/90	0.5	1	481135.55	1349611.44
4-Nitroaniline	2000	ug/kg	UJ	056595	9/25/90	0.5	1	481133.83	1349644.52
4-Nitroaniline	2000	ug/kg	U	056985	11/4/90	2	2.5	481587.71	1349680.95
4-Nitroaniline	2000	ug/kg	U	057535	3/8/91	2	2.5	481216.91	1349510.38
4-Nitroaniline	2000	ug/kg	UJ	056908	11/1/90	2	2.5	481621.03	1349517.53
4-Nitroaniline	2000	ug/kg	UJ	056912	11/1/90	4	4.5	481621.03	1349517.53
4-Nitroaniline	1900	ug/kg	U	056982	11/4/90	0.5	1	481587.71	1349680.95

000100

J-8404

APPENDIX C
EXISTING DATA ON STOCKPILE BPW-005

Parameter	Result	Units	Qual	Sample ID	Sample Date	Top Depth	Bottom Depth	Northing	Easting
4-Nitroaniline	1900	ug/kg	UJ	056484	9/27/90	0.5	1	481139.24	1349502.78
4-Nitroaniline	1900	ug/kg	UJ	056487	10/2/90	2	2.5	481139.24	1349502.78
4-Nitroaniline	1900	ug/kg	UJ	056598	9/25/90	2	2.5	481133.83	1349644.52
4-Nitroaniline	1900	ug/kg	U	056989	11/4/90	4	4.5	481587.71	1349680.95
4-Nitroaniline	1900	ug/kg	UJ	056491	10/2/90	4	4.5	481139.24	1349502.78
4-Nitroaniline	1900	ug/kg	UJ	056513	10/3/90	4	4.5	481137.29	1349541.06
4-Nitroaniline	1900	ug/kg	UJ	056580	9/24/90	4	4.5	481135.55	1349611.44
4-Nitroaniline	1900	ug/kg	U	057550	3/9/91	9.5	10	481216.91	1349510.38
4-Nitroaniline	1900	ug/kg	UJ	056502	10/2/90	9.5	10	481139.24	1349502.78
4-Nitroaniline	1900	ug/kg	UJ	056524	10/3/90	9.5	10	481137.29	1349541.06
4-Nitroaniline	1900	ug/kg	UJ	056569	10/2/90	9.5	10	481138.11	1349580.59
4-Nitroaniline	1900	ug/kg	U	057560	3/10/91	14.5	15	481216.91	1349510.38
4-Nitroaniline	1800	ug/kg	U	057532	3/8/91	0.5	1	481216.91	1349510.38
4-Nitroaniline	1800	ug/kg	UJ	056506	10/3/90	0.5	1	481137.29	1349541.06
4-Nitroaniline	1800	ug/kg	UJ	056551	9/27/90	0.5	1	481138.11	1349580.59
4-Nitroaniline	1800	ug/kg	UJ	056529	9/21/90	0.5	1	481110.16	1349642.79
4-Nitroaniline	1800	ug/kg	UJ	056661	9/24/90	0.5	1	481107.94	1349670.73
4-Nitroaniline	1800	ug/kg	UJ	056576	9/24/90	2	2.5	481135.55	1349611.44
4-Nitroaniline	1800	ug/kg	UJ	056532	9/23/90	2	2.5	481110.16	1349642.79
4-Nitroaniline	1800	ug/kg	UJ	056664	9/24/90	2	2.5	481107.94	1349670.73
4-Nitroaniline	1800	ug/kg	U	057539	3/9/91	4	4.5	481216.91	1349510.38
4-Nitroaniline	1800	ug/kg	UJ	056602	9/26/90	4	4.5	481133.83	1349644.52
4-Nitroaniline	1800	ug/kg	UJ	056536	9/23/90	4	4.5	481110.16	1349642.79
4-Nitroaniline	1800	ug/kg	UJ	056668	9/24/90	4	4.5	481107.94	1349670.73
4-Nitroaniline	1800	ug/kg	UJ	056591	9/25/90	9.5	10	481135.55	1349611.44
4-Nitroaniline	1800	ug/kg	UJ	056613	9/26/90	9.5	10	481133.83	1349644.52
4-Nitroaniline	1800	ug/kg	UJ	056547	9/23/90	9.5	10	481110.16	1349642.79
4-Nitroaniline	1800	ug/kg	UJ	056679	9/25/90	9.5	10	481107.94	1349670.73
4-Nitroaniline	1700	ug/kg	UJ	056509	10/3/90	2	2.5	481137.29	1349541.06
4-Nitroaniline	1700	ug/kg	UJ	056554	10/2/90	2	2.5	481138.11	1349580.59
4-Nitroaniline	1700	ug/kg	UNV	056509	10/3/90	2	2.5	481137.29	1349541.06
4-Nitroaniline	1700	ug/kg	UJ	056558	10/2/90	4	4.5	481138.11	1349580.59
4-Nitroaniline	1000	ug/kg	UJ	121674	7/13/93	1	1.5	481396.77	1349596.16

000101

APPENDIX C
EXISTING DATA ON STOCKPILE BPW-005

Parameter	Result	Units	Qual	Sample ID	Sample Date	Top Depth	Bottom Depth	Northing	Easting
4-Nitroaniline	950	ug/kg	UJ	121679	7/13/93	2.5	3	481396.77	1349596.16
4-Nitroaniline	940	ug/kg	UJ	121685	7/13/93	4.5	5	481396.77	1349596.16
4-Nitroaniline	930	ug/kg	UJ	121670	7/13/93	0	0.5	481396.77	1349596.16
alpha-Chlordane	1100	ug/kg	U	056573	9/24/90	0.5	1	481135.55	1349611.44
alpha-Chlordane	900	ug/kg	U	056576	9/24/90	2	2.5	481135.55	1349611.44
alpha-Chlordane	450	ug/kg	U	056591	9/25/90	9.5	10	481135.55	1349611.44
alpha-Chlordane	380	ug/kg	U	056487	10/2/90	2	2.5	481139.24	1349502.78
alpha-Chlordane	380	ug/kg	U	056569	10/2/90	9.5	10	481138.11	1349580.59
alpha-Chlordane	370	ug/kg	U	056664	9/24/90	2	2.5	481107.94	1349670.73
alpha-Chlordane	370	ug/kg	U	056491	10/2/90	4	4.5	481139.24	1349502.78
alpha-Chlordane	370	ug/kg	U	056502	10/2/90	9.5	10	481139.24	1349502.78
alpha-Chlordane	370	ug/kg	U	056524	10/3/90	9.5	10	481137.29	1349541.06
alpha-Chlordane	350	ug/kg	U	056506	10/3/90	0.5	1	481137.29	1349541.06
alpha-Chlordane	350	ug/kg	U	056551	9/27/90	0.5	1	481138.11	1349580.59
alpha-Chlordane	350	ug/kg	U	056554	10/2/90	2	2.5	481138.11	1349580.59
alpha-Chlordane	350	ug/kg	U	056558	10/2/90	4	4.5	481138.11	1349580.59
alpha-Chlordane	340	ug/kg	U	056509	10/3/90	2	2.5	481137.29	1349541.06
alpha-Chlordane	210	ug/kg	U	056899	11/2/90	2	2.5	481666.29	1349483.48
alpha-Chlordane	200	ug/kg	U	056985	11/4/90	2	2.5	481587.71	1349680.95
alpha-Chlordane	190	ug/kg	U	056982	11/4/90	0.5	1	481587.71	1349680.95
alpha-Chlordane	190	ug/kg	U	056989	11/4/90	4	4.5	481587.71	1349680.95
alpha-Chlordane	190	ug/kg	U	056580	9/24/90	4	4.5	481135.55	1349611.44
alpha-Chlordane	180	ug/kg	U	056661	9/24/90	0.5	1	481107.94	1349670.73
alpha-Chlordane	180	ug/kg	U	056668	9/24/90	4	4.5	481107.94	1349670.73
alpha-Chlordane	100	ug/kg	U	056905	10/31/90	0.5	1	481621.03	1349517.53
alpha-Chlordane	100	ug/kg	U	056908	11/1/90	2	2.5	481621.03	1349517.53
alpha-Chlordane	100	ug/kg	U	057535	3/8/91	2	2.5	481216.91	1349510.38
alpha-Chlordane	100	ug/kg	U	056912	11/1/90	4	4.5	481621.03	1349517.53
alpha-Chlordane	98	ug/kg	U	056595	9/25/90	0.5	1	481133.83	1349644.52
alpha-Chlordane	95	ug/kg	U	056598	9/25/90	2	2.5	481133.83	1349644.52
alpha-Chlordane	95	ug/kg	U	057550	3/9/91	9.5	10	481216.91	1349510.38
alpha-Chlordane	94	ug/kg	U	057539	3/9/91	4	4.5	481216.91	1349510.38
alpha-Chlordane	93	ug/kg	U	056484	9/27/90	0.5	1	481139.24	1349502.78

APPENDIX C
EXISTING DATA ON STOCKPILE BPW-005

Parameter	Result	Units	Qual	Sample ID	Sample Date	Top Depth	Bottom Depth	Northing	Easting
alpha-Chlordane	93	ug/kg	U	056513	10/3/90	4	4.5	481137.29	1349541.06
alpha-Chlordane	93	ug/kg	U	056602	9/26/90	4	4.5	481133.83	1349644.52
alpha-Chlordane	93	ug/kg	U	056536	9/23/90	4	4.5	481110.16	1349642.79
alpha-Chlordane	92	ug/kg	U	056532	9/23/90	2	2.5	481110.16	1349642.79
alpha-Chlordane	92	ug/kg	U	056547	9/23/90	9.5	10	481110.16	1349642.79
alpha-Chlordane	92	ug/kg	U	056679	9/25/90	9.5	10	481107.94	1349670.73
alpha-Chlordane	92	ug/kg	U	057560	3/10/91	14.5	15	481216.91	1349510.38
alpha-Chlordane	91	ug/kg	U	056529	9/21/90	0.5	1	481110.16	1349642.79
alpha-Chlordane	90	ug/kg	U	056896	11/2/90	0.5	1	481666.29	1349483.48
alpha-Chlordane	90	ug/kg	U	057532	3/8/91	0.5	1	481216.91	1349510.38
alpha-Chlordane	90	ug/kg	U	056613	9/26/90	9.5	10	481133.83	1349644.52
alpha-Chlordane	2.1	ug/kg	U	121674	7/13/93	1	1.5	481396.77	1349596.16
alpha-Chlordane	2	ug/kg	UNV	121679	7/13/93	2.5	3	481396.77	1349596.16
alpha-Chlordane	1.9	ug/kg	UJ	121670	7/13/93	0	0.5	481396.77	1349596.16
alpha-Chlordane	1.9	ug/kg	U	121685	7/13/93	4.5	5	481396.77	1349596.16
bis(2-Chloroisopropyl) ether	3700	ug/kg	UJ	056896	11/2/90	0.5	1	481666.29	1349483.48
bis(2-Chloroisopropyl) ether	2100	ug/kg	UJ	056899	11/2/90	2	2.5	481666.29	1349483.48
bis(2-Chloroisopropyl) ether	430	ug/kg	UJ	056573	9/24/90	0.5	1	481135.55	1349611.44
bis(2-Chloroisopropyl) ether	420	ug/kg	UJ	056905	10/31/90	0.5	1	481621.03	1349517.53
bis(2-Chloroisopropyl) ether	420	ug/kg	U	057535	3/8/91	2	2.5	481216.91	1349510.38
bis(2-Chloroisopropyl) ether	420	ug/kg	UJ	056985	11/4/90	2	2.5	481587.71	1349680.95
bis(2-Chloroisopropyl) ether	410	ug/kg	UJ	121674	7/13/93	1	1.5	481396.77	1349596.16
bis(2-Chloroisopropyl) ether	410	ug/kg	UJ	056908	11/1/90	2	2.5	481621.03	1349517.53
bis(2-Chloroisopropyl) ether	410	ug/kg	UJ	056912	11/1/90	4	4.5	481621.03	1349517.53
bis(2-Chloroisopropyl) ether	390	ug/kg	UJ	056989	11/4/90	4	4.5	481587.71	1349680.95
bis(2-Chloroisopropyl) ether	390	ug/kg	U	057550	3/9/91	9.5	10	481216.91	1349510.38
bis(2-Chloroisopropyl) ether	390	ug/kg	UJ	056524	10/3/90	9.5	10	481137.29	1349541.06
bis(2-Chloroisopropyl) ether	390	ug/kg	UJ	056569	10/2/90	9.5	10	481138.11	1349580.59
bis(2-Chloroisopropyl) ether	380	ug/kg	U	057532	3/8/91	0.5	1	481216.91	1349510.38
bis(2-Chloroisopropyl) ether	380	ug/kg	UJ	056982	11/4/90	0.5	1	481587.71	1349680.95
bis(2-Chloroisopropyl) ether	380	ug/kg	UJ	056532	9/23/90	2	2.5	481110.16	1349642.79
bis(2-Chloroisopropyl) ether	380	ug/kg	UJ	056664	9/24/90	2	2.5	481107.94	1349670.73
bis(2-Chloroisopropyl) ether	380	ug/kg	UJ	121679	7/13/93	2.5	3	481396.77	1349596.16

000103

APPENDIX C
EXISTING DATA ON STOCKPILE BPW-005

Parameter	Result	Units	Qual	Sample ID	Sample Date	Top Depth	Bottom Depth	Northing	Easting
bis(2-Chloroisopropyl) ether	380	ug/kg	U	057539	3/9/91	4	4.5	481216.91	1349510.38
bis(2-Chloroisopropyl) ether	380	ug/kg	UJ	056513	10/3/90	4	4.5	481137.29	1349541.06
bis(2-Chloroisopropyl) ether	380	ug/kg	UJ	056580	9/24/90	4	4.5	481135.55	1349611.44
bis(2-Chloroisopropyl) ether	380	ug/kg	UJ	056536	9/23/90	4	4.5	481110.16	1349642.79
bis(2-Chloroisopropyl) ether	380	ug/kg	UJ	056502	10/2/90	9.5	10	481139.24	1349502.78
bis(2-Chloroisopropyl) ether	380	ug/kg	UJ	056547	9/23/90	9.5	10	481110.16	1349642.79
bis(2-Chloroisopropyl) ether	380	ug/kg	U	057560	3/10/91	14.5	15	481216.91	1349510.38
bis(2-Chloroisopropyl) ether	370	ug/kg	UJ	056661	9/24/90	0.5	1	481107.94	1349670.73
bis(2-Chloroisopropyl) ether	370	ug/kg	UJ	056576	9/24/90	2	2.5	481135.55	1349611.44
bis(2-Chloroisopropyl) ether	370	ug/kg	UJ	056668	9/24/90	4	4.5	481107.94	1349670.73
bis(2-Chloroisopropyl) ether	370	ug/kg	UJ	121685	7/13/93	4.5	5	481396.77	1349596.16
bis(2-Chloroisopropyl) ether	360	ug/kg	UJ	056506	10/3/90	0.5	1	481137.29	1349541.06
bis(2-Chloroisopropyl) ether	360	ug/kg	UJ	056554	10/2/90	2	2.5	481138.11	1349580.59
bis(2-Chloroisopropyl) ether	360	ug/kg	UJ	056558	10/2/90	4	4.5	481138.11	1349580.59
bis(2-Chloroisopropyl) ether	350	ug/kg	UJ	056509	10/3/90	2	2.5	481137.29	1349541.06
bis(2-Chloroisopropyl) ether	350	ug/kg	UNV	056509	10/3/90	2	2.5	481137.29	1349541.06
bis(2-Chloroisopropyl) ether	330	ug/kg	U	12459-1-S	8/3/99	0	0.5	481396.9	1349597.34
bis(2-Chloroisopropyl) ether	330	ug/kg	U	12460-1-S	8/3/99	0	0.5	481408.03	1349597
bis(2-Chloroisopropyl) ether	330	ug/kg	U	12461-1-S	8/3/99	0	0.5	481396.82	1349608.99
bis(2-Chloroisopropyl) ether	330	ug/kg	U	12462-1-S	8/3/99	0	0.5	481385.97	1349595.94
bis(2-Chloroisopropyl) ether	330	ug/kg	U	12463-1-S	8/3/99	0	0.5	481396.02	1349586.4
bis(2-Chloroisopropyl) ether	48	ug/kg	J	121670	7/13/93	0	0.5	481396.77	1349596.16
Bromodichloromethane	50	ug/kg	U	12637-14-L	11/19/99	6.5	7	481630.47	1349670.84
Bromodichloromethane	50	ug/kg	U	12637-20-L	11/19/99	9.5	10	481630.47	1349670.84
Bromodichloromethane	45.4	ug/kg	U	12637-2-L	11/19/99	0.5	1	481630.47	1349670.84
Bromodichloromethane	45.4	ug/kg	U	12637-8-L	11/19/99	3.5	4	481630.47	1349670.84
Bromodichloromethane	38	ug/kg	UNV	12553-3B-L	10/20/99	1	1.5	481127.44	1349611.23
Bromodichloromethane	12	ug/kg	U	121674	7/13/93	1	1.5	481396.77	1349596.16
Bromodichloromethane	11	ug/kg	UJ	121670	7/13/93	0	0.5	481396.77	1349596.16
Bromodichloromethane	11	ug/kg	U	121679	7/13/93	2.5	3	481396.77	1349596.16
Bromodichloromethane	11	ug/kg	U	121685	7/13/93	4.5	5	481396.77	1349596.16
Bromodichloromethane	6	ug/kg	U	056905	10/31/90	0.5	1	481621.03	1349517.53
Bromodichloromethane	6	ug/kg	U	056484	9/27/90	0.5	1	481139.24	1349502.78

APPENDIX C
EXISTING DATA ON STOCKPILE BPW-005

Parameter	Result	Units	Qual	Sample ID	Sample Date	Top Depth	Bottom Depth	Northing	Easting
Bromodichloromethane	6	ug/kg	U	056595	9/25/90	0.5	1	481133.83	1349644.52
Bromodichloromethane	6	ug/kg	U	056529	9/21/90	0.5	1	481110.16	1349642.79
Bromodichloromethane	6	ug/kg	UJ	056982	11/4/90	0.5	1	481587.71	1349680.95
Bromodichloromethane	6	ug/kg	U	056899	11/2/90	2	2.5	481666.29	1349483.48
Bromodichloromethane	6	ug/kg	U	056908	11/1/90	2	2.5	481621.03	1349517.53
Bromodichloromethane	6	ug/kg	U	056487	10/2/90	2	2.5	481139.24	1349502.78
Bromodichloromethane	6	ug/kg	U	056598	9/25/90	2	2.5	481133.83	1349644.52
Bromodichloromethane	6	ug/kg	U	056532	9/23/90	2	2.5	481110.16	1349642.79
Bromodichloromethane	6	ug/kg	U	057535	3/8/91	2	2.5	481216.91	1349510.38
Bromodichloromethane	6	ug/kg	UJ	056985	11/4/90	2	2.5	481587.71	1349680.95
Bromodichloromethane	6	ug/kg	U	056903	11/2/90	4	4.5	481666.29	1349483.48
Bromodichloromethane	6	ug/kg	U	056912	11/1/90	4	4.5	481621.03	1349517.53
Bromodichloromethane	6	ug/kg	U	056989	11/4/90	4	4.5	481587.71	1349680.95
Bromodichloromethane	6	ug/kg	U	056491	10/2/90	4	4.5	481139.24	1349502.78
Bromodichloromethane	6	ug/kg	U	056580	9/24/90	4	4.5	481135.55	1349611.44
Bromodichloromethane	6	ug/kg	U	056602	9/26/90	4	4.5	481133.83	1349644.52
Bromodichloromethane	6	ug/kg	U	056668	9/24/90	4	4.5	481107.94	1349670.73
Bromodichloromethane	6	ug/kg	UJ	056536	9/23/90	4	4.5	481110.16	1349642.79
Bromodichloromethane	6	ug/kg	U	056502	10/2/90	9.5	10	481139.24	1349502.78
Bromodichloromethane	6	ug/kg	U	056547	9/23/90	9.5	10	481110.16	1349642.79
Bromodichloromethane	6	ug/kg	U	056679	9/25/90	9.5	10	481107.94	1349670.73
Bromodichloromethane	6	ug/kg	UJ	056569	10/2/90	9.5	10	481138.11	1349580.59
Bromodichloromethane	6	ug/kg	UJ	057550	3/9/91	9.5	10	481216.91	1349510.38
Bromodichloromethane	5	ug/kg	U	056896	11/2/90	0.5	1	481666.29	1349483.48
Bromodichloromethane	5	ug/kg	U	056551	9/27/90	0.5	1	481138.11	1349580.59
Bromodichloromethane	5	ug/kg	U	056661	9/24/90	0.5	1	481107.94	1349670.73
Bromodichloromethane	5	ug/kg	U	057532	3/8/91	0.5	1	481216.91	1349510.38
Bromodichloromethane	5	ug/kg	U	056576	9/24/90	2	2.5	481135.55	1349611.44
Bromodichloromethane	5	ug/kg	U	056664	9/24/90	2	2.5	481107.94	1349670.73
Bromodichloromethane	5	ug/kg	UJ	056554	10/2/90	2	2.5	481138.11	1349580.59
Bromodichloromethane	5	ug/kg	U	057539	3/9/91	4	4.5	481216.91	1349510.38
Bromodichloromethane	5	ug/kg	UJ	056558	10/2/90	4	4.5	481138.11	1349580.59
Bromodichloromethane	5	ug/kg	U	056591	9/25/90	9.5	10	481135.55	1349611.44

APPENDIX C
EXISTING DATA ON STOCKPILE BPW-005

Parameter	Result	Units	Qual	Sample ID	Sample Date	Top Depth	Bottom Depth	Northing	Easting
Bromodichloromethane	5	ug/kg	U	056613	9/26/90	9.5	10	481133.83	1349644.52
Bromodichloromethane	5	ug/kg	UJ	057560	3/10/91	14.5	15	481216.91	1349510.38
Carbazole	410	ug/kg	UJ	121674	7/13/93	1	1.5	481396.77	1349596.16
Carbazole	380	ug/kg	UJ	121679	7/13/93	2.5	3	481396.77	1349596.16
Carbazole	370	ug/kg	UJ	121685	7/13/93	4.5	5	481396.77	1349596.16
Carbazole	65	ug/kg	J	121670	7/13/93	0	0.5	481396.77	1349596.16
Chloroethane	50	ug/kg	U	12637-14-L	11/19/99	6.5	7	481630.47	1349670.84
Chloroethane	50	ug/kg	U	12637-20-L	11/19/99	9.5	10	481630.47	1349670.84
Chloroethane	45.4	ug/kg	U	12637-2-L	11/19/99	0.5	1	481630.47	1349670.84
Chloroethane	45.4	ug/kg	U	12637-8-L	11/19/99	3.5	4	481630.47	1349670.84
Chloroethane	38	ug/kg	UNV	12553-3B-L	10/20/99	1	1.5	481127.44	1349611.23
Chloroethane	13	ug/kg	UJ	056573	9/24/90	0.5	1	481135.55	1349611.44
Chloroethane	13	ug/kg	U	056899	11/2/90	2	2.5	481666.29	1349483.48
Chloroethane	12	ug/kg	U	056905	10/31/90	0.5	1	481621.03	1349517.53
Chloroethane	12	ug/kg	U	056484	9/27/90	0.5	1	481139.24	1349502.78
Chloroethane	12	ug/kg	U	056595	9/25/90	0.5	1	481133.83	1349644.52
Chloroethane	12	ug/kg	U	121674	7/13/93	1	1.5	481396.77	1349596.16
Chloroethane	12	ug/kg	U	056908	11/1/90	2	2.5	481621.03	1349517.53
Chloroethane	12	ug/kg	U	056487	10/2/90	2	2.5	481139.24	1349502.78
Chloroethane	12	ug/kg	U	057535	3/8/91	2	2.5	481216.91	1349510.38
Chloroethane	12	ug/kg	UJ	056985	11/4/90	2	2.5	481587.71	1349680.95
Chloroethane	12	ug/kg	U	056912	11/1/90	4	4.5	481621.03	1349517.53
Chloroethane	11	ug/kg	UJ	121670	7/13/93	0	0.5	481396.77	1349596.16
Chloroethane	11	ug/kg	U	056896	11/2/90	0.5	1	481666.29	1349483.48
Chloroethane	11	ug/kg	U	056551	9/27/90	0.5	1	481138.11	1349580.59
Chloroethane	11	ug/kg	U	056529	9/21/90	0.5	1	481110.16	1349642.79
Chloroethane	11	ug/kg	U	056661	9/24/90	0.5	1	481107.94	1349670.73
Chloroethane	11	ug/kg	U	057532	3/8/91	0.5	1	481216.91	1349510.38
Chloroethane	11	ug/kg	UJ	056982	11/4/90	0.5	1	481587.71	1349680.95
Chloroethane	11	ug/kg	U	056554	10/2/90	2	2.5	481138.11	1349580.59
Chloroethane	11	ug/kg	U	056576	9/24/90	2	2.5	481135.55	1349611.44
Chloroethane	11	ug/kg	U	056598	9/25/90	2	2.5	481133.83	1349644.52
Chloroethane	11	ug/kg	U	056532	9/23/90	2	2.5	481110.16	1349642.79

EXISTING DATA ON STOCKPILE BPW-005

Parameter	Result	Units	Qual	Sample ID	Sample Date	Top Depth	Bottom Depth	Northing	Easting
Chloroethane	11	ug/kg	U	056664	9/24/90	2	2.5	481107.94	1349670.73
Chloroethane	11	ug/kg	U	121679	7/13/93	2.5	3	481396.77	1349596.16
Chloroethane	11	ug/kg	U	056903	11/2/90	4	4.5	481666.29	1349483.48
Chloroethane	11	ug/kg	U	056989	11/4/90	4	4.5	481587.71	1349680.95
Chloroethane	11	ug/kg	U	056491	10/2/90	4	4.5	481139.24	1349502.78
Chloroethane	11	ug/kg	U	056558	10/2/90	4	4.5	481138.11	1349580.59
Chloroethane	11	ug/kg	U	056580	9/24/90	4	4.5	481135.55	1349611.44
Chloroethane	11	ug/kg	U	056602	9/26/90	4	4.5	481133.83	1349644.52
Chloroethane	11	ug/kg	U	056536	9/23/90	4	4.5	481110.16	1349642.79
Chloroethane	11	ug/kg	U	056668	9/24/90	4	4.5	481107.94	1349670.73
Chloroethane	11	ug/kg	U	057539	3/9/91	4	4.5	481216.91	1349510.38
Chloroethane	11	ug/kg	U	121685	7/13/93	4.5	5	481396.77	1349596.16
Chloroethane	11	ug/kg	U	056502	10/2/90	9.5	10	481139.24	1349502.78
Chloroethane	11	ug/kg	U	056569	10/2/90	9.5	10	481138.11	1349580.59
Chloroethane	11	ug/kg	U	056591	9/25/90	9.5	10	481135.55	1349611.44
Chloroethane	11	ug/kg	U	056613	9/26/90	9.5	10	481133.83	1349644.52
Chloroethane	11	ug/kg	U	056547	9/23/90	9.5	10	481110.16	1349642.79
Chloroethane	11	ug/kg	U	056679	9/25/90	9.5	10	481107.94	1349670.73
Chloroethane	11	ug/kg	UJ	057550	3/9/91	9.5	10	481216.91	1349510.38
Chloroethane	11	ug/kg	UJ	057560	3/10/91	14.5	15	481216.91	1349510.38
Mercury	0.22	mg/kg	U	056536	9/23/90	4	4.5	481110.16	1349642.79
Mercury	0.21	mg/kg	U	056664	9/24/90	2	2.5	481107.94	1349670.73
Mercury	0.18	mg/kg	U	056532	9/23/90	2	2.5	481110.16	1349642.79
Mercury	0.18	mg/kg	U	056547	9/23/90	9.5	10	481110.16	1349642.79
Mercury	0.15	mg/kg	-	056896	11/2/90	0.5	1	481666.29	1349483.48
Mercury	0.13	mg/kg	U	056908	11/1/90	2	2.5	481621.03	1349517.53
Mercury	0.12	mg/kg	U	121670	7/13/93	0	0.5	481396.77	1349596.16
Mercury	0.12	mg/kg	U	056573	9/24/90	0.5	1	481135.55	1349611.44
Mercury	0.12	mg/kg	U	056899	11/2/90	2	2.5	481666.29	1349483.48
Mercury	0.12	mg/kg	U	057535	3/8/91	2	2.5	481216.91	1349510.38
Mercury	0.111	mg/kg	UNV	056487	10/2/90	2	2.5	481139.24	1349502.78
Mercury	0.11	mg/kg	U	056905	10/31/90	0.5	1	481621.03	1349517.53
Mercury	0.11	mg/kg	U	056484	9/27/90	0.5	1	481139.24	1349502.78

000107

APPENDIX C
EXISTING DATA ON STOCKPILE BPW-005

Parameter	Result	Units	Qual	Sample ID	Sample Date	Top Depth	Bottom Depth	Northing	Easting
Mercury	0.11	mg/kg	U	056506	10/3/90	0.5	1	481137.29	1349541.06
Mercury	0.11	mg/kg	U	056551	9/27/90	0.5	1	481138.11	1349580.59
Mercury	0.11	mg/kg	U	056529	9/21/90	0.5	1	481110.16	1349642.79
Mercury	0.11	mg/kg	U	057532	3/8/91	0.5	1	481216.91	1349510.38
Mercury	0.11	mg/kg	U	056487	10/2/90	2	2.5	481139.24	1349502.78
Mercury	0.11	mg/kg	U	056598	9/25/90	2	2.5	481133.83	1349644.52
Mercury	0.11	mg/kg	U	056903	11/2/90	4	4.5	481666.29	1349483.48
Mercury	0.11	mg/kg	U	056912	11/1/90	4	4.5	481621.03	1349517.53
Mercury	0.11	mg/kg	U	056491	10/2/90	4	4.5	481139.24	1349502.78
Mercury	0.11	mg/kg	U	056513	10/3/90	4	4.5	481137.29	1349541.06
Mercury	0.11	mg/kg	U	057539	3/9/91	4	4.5	481216.91	1349510.38
Mercury	0.11	mg/kg	U	056502	10/2/90	9.5	10	481139.24	1349502.78
Mercury	0.11	mg/kg	U	056591	9/25/90	9.5	10	481135.55	1349611.44
Mercury	0.11	mg/kg	U	056613	9/26/90	9.5	10	481133.83	1349644.52
Mercury	0.11	mg/kg	U	056679	9/25/90	9.5	10	481107.94	1349670.73
Mercury	0.11	mg/kg	U	057550	3/9/91	9.5	10	481216.91	1349510.38
Mercury	0.11	mg/kg	U	057560	3/10/91	14.5	15	481216.91	1349510.38
Mercury	0.1	mg/kg	U	056595	9/25/90	0.5	1	481133.83	1349644.52
Mercury	0.1	mg/kg	U	056661	9/24/90	0.5	1	481107.94	1349670.73
Mercury	0.1	mg/kg	U	056985	11/4/90	2	2.5	481587.71	1349680.95
Mercury	0.1	mg/kg	U	056509	10/3/90	2	2.5	481137.29	1349541.06
Mercury	0.1	mg/kg	U	056554	10/2/90	2	2.5	481138.11	1349580.59
Mercury	0.1	mg/kg	U	056576	9/24/90	2	2.5	481135.55	1349611.44
Mercury	0.1	mg/kg	U	056580	9/24/90	4	4.5	481135.55	1349611.44
Mercury	0.1	mg/kg	U	056602	9/26/90	4	4.5	481133.83	1349644.52
Mercury	0.1	mg/kg	U	056668	9/24/90	4	4.5	481107.94	1349670.73
Mercury	0.1	mg/kg	U	056524	10/3/90	9.5	10	481137.29	1349541.06
Mercury	0.1	mg/kg	U	056569	10/2/90	9.5	10	481138.11	1349580.59
Mercury	0.09	mg/kg	U	056982	11/4/90	0.5	1	481587.71	1349680.95
Mercury	0.09	mg/kg	U	056989	11/4/90	4	4.5	481587.71	1349680.95
Mercury	0.09	mg/kg	U	056558	10/2/90	4	4.5	481138.11	1349580.59
Mercury	0.0881	mg/kg	UNV	056661	9/24/90	0.5	1	481107.94	1349670.73
Mercury	0.06	mg/kg	U	121674	7/13/93	1	1.5	481396.77	1349596.16

APPENDIX C
EXISTING DATA ON STOCKPILE BPW-005

Parameter	Result	Units	Qual	Sample ID	Sample Date	Top Depth	Bottom Depth	Northing	Easting
Mercury	0.06	mg/kg	U	121679	7/13/93	2.5	3	481396.77	1349596.16
Mercury	0.06	mg/kg	U	121685	7/13/93	4.5	5	481396.77	1349596.16
Strontium-90	0.5	pCi/g	UJ	000831	8/25/91			481138.11	1349580.59
Technetium-99	0.9	pCi/g	U	000831	8/25/91			481138.11	1349580.59
Tetrachloroethene	50	ug/kg	U	12637-14-L	11/19/99	6.5	7	481630.47	1349670.84
Tetrachloroethene	50	ug/kg	U	12637-20-L	11/19/99	9.5	10	481630.47	1349670.84
Tetrachloroethene	45.4	ug/kg	U	12637-2-L	11/19/99	0.5	1	481630.47	1349670.84
Tetrachloroethene	45.4	ug/kg	U	12637-8-L	11/19/99	3.5	4	481630.47	1349670.84
Tetrachloroethene	44	ug/kg	J	056985	11/4/90	2	2.5	481587.71	1349680.95
Tetrachloroethene	38	ug/kg	UNV	12553-3B-L	10/20/99	1	1.5	481127.44	1349611.23
Tetrachloroethene	15	ug/kg	J	056982	11/4/90	0.5	1	481587.71	1349680.95
Tetrachloroethene	12	ug/kg	U	121674	7/13/93	1	1.5	481396.77	1349596.16
Tetrachloroethene	11	ug/kg	U	121679	7/13/93	2.5	3	481396.77	1349596.16
Tetrachloroethene	11	ug/kg	U	121685	7/13/93	4.5	5	481396.77	1349596.16
Tetrachloroethene	6	ug/kg	U	056905	10/31/90	0.5	1	481621.03	1349517.53
Tetrachloroethene	6	ug/kg	U	056484	9/27/90	0.5	1	481139.24	1349502.78
Tetrachloroethene	6	ug/kg	U	056595	9/25/90	0.5	1	481133.83	1349644.52
Tetrachloroethene	6	ug/kg	U	056529	9/21/90	0.5	1	481110.16	1349642.79
Tetrachloroethene	6	ug/kg	U	056899	11/2/90	2	2.5	481666.29	1349483.48
Tetrachloroethene	6	ug/kg	U	056908	11/1/90	2	2.5	481621.03	1349517.53
Tetrachloroethene	6	ug/kg	U	056487	10/2/90	2	2.5	481139.24	1349502.78
Tetrachloroethene	6	ug/kg	U	056598	9/25/90	2	2.5	481133.83	1349644.52
Tetrachloroethene	6	ug/kg	U	056532	9/23/90	2	2.5	481110.16	1349642.79
Tetrachloroethene	6	ug/kg	U	057535	3/8/91	2	2.5	481216.91	1349510.38
Tetrachloroethene	6	ug/kg	U	056903	11/2/90	4	4.5	481666.29	1349483.48
Tetrachloroethene	6	ug/kg	U	056912	11/1/90	4	4.5	481621.03	1349517.53
Tetrachloroethene	6	ug/kg	U	056580	9/24/90	4	4.5	481135.55	1349611.44
Tetrachloroethene	6	ug/kg	U	056602	9/26/90	4	4.5	481133.83	1349644.52
Tetrachloroethene	6	ug/kg	U	056536	9/23/90	4	4.5	481110.16	1349642.79
Tetrachloroethene	6	ug/kg	U	056668	9/24/90	4	4.5	481107.94	1349670.73
Tetrachloroethene	6	ug/kg	UJ	056491	10/2/90	4	4.5	481139.24	1349502.78
Tetrachloroethene	6	ug/kg	U	056547	9/23/90	9.5	10	481110.16	1349642.79
Tetrachloroethene	6	ug/kg	U	056679	9/25/90	9.5	10	481107.94	1349670.73

APPENDIX C
EXISTING DATA ON STOCKPILE BPW-005

Parameter	Result	Units	Qual	Sample ID	Sample Date	Top Depth	Bottom Depth	Northing	Easting
Tetrachloroethene	6	ug/kg	UJ	056502	10/2/90	9.5	10	481139.24	1349502.78
Tetrachloroethene	6	ug/kg	UJ	056569	10/2/90	9.5	10	481138.11	1349580.59
Tetrachloroethene	6	ug/kg	UJ	057550	3/9/91	9.5	10	481216.91	1349510.38
Tetrachloroethene	5	ug/kg	U	056896	11/2/90	0.5	1	481666.29	1349483.48
Tetrachloroethene	5	ug/kg	U	056551	9/27/90	0.5	1	481138.11	1349580.59
Tetrachloroethene	5	ug/kg	U	057532	3/8/91	0.5	1	481216.91	1349510.38
Tetrachloroethene	5	ug/kg	UJ	056661	9/24/90	0.5	1	481107.94	1349670.73
Tetrachloroethene	5	ug/kg	U	056576	9/24/90	2	2.5	481135.55	1349611.44
Tetrachloroethene	5	ug/kg	U	056664	9/24/90	2	2.5	481107.94	1349670.73
Tetrachloroethene	5	ug/kg	UJ	056554	10/2/90	2	2.5	481138.11	1349580.59
Tetrachloroethene	5	ug/kg	U	057539	3/9/91	4	4.5	481216.91	1349510.38
Tetrachloroethene	5	ug/kg	UJ	056558	10/2/90	4	4.5	481138.11	1349580.59
Tetrachloroethene	5	ug/kg	U	056591	9/25/90	9.5	10	481135.55	1349611.44
Tetrachloroethene	5	ug/kg	U	056613	9/26/90	9.5	10	481133.83	1349644.52
Tetrachloroethene	5	ug/kg	UJ	057560	3/10/91	14.5	15	481216.91	1349510.38
Tetrachloroethene	3	ug/kg	J	121670	7/13/93	0	0.5	481396.77	1349596.16
Tetrachloroethene	1	ug/kg	J	056989	11/4/90	4	4.5	481587.71	1349680.95
Toxaphene	2100	ug/kg	U	056573	9/24/90	0.5	1	481135.55	1349611.44
Toxaphene	1800	ug/kg	U	056576	9/24/90	2	2.5	481135.55	1349611.44
Toxaphene	900	ug/kg	U	056591	9/25/90	9.5	10	481135.55	1349611.44
Toxaphene	770	ug/kg	U	056487	10/2/90	2	2.5	481139.24	1349502.78
Toxaphene	760	ug/kg	U	056569	10/2/90	9.5	10	481138.11	1349580.59
Toxaphene	750	ug/kg	U	056664	9/24/90	2	2.5	481107.94	1349670.73
Toxaphene	750	ug/kg	U	056524	10/3/90	9.5	10	481137.29	1349541.06
Toxaphene	740	ug/kg	U	056491	10/2/90	4	4.5	481139.24	1349502.78
Toxaphene	740	ug/kg	U	056502	10/2/90	9.5	10	481139.24	1349502.78
Toxaphene	710	ug/kg	U	056506	10/3/90	0.5	1	481137.29	1349541.06
Toxaphene	710	ug/kg	U	056551	9/27/90	0.5	1	481138.11	1349580.59
Toxaphene	690	ug/kg	U	056554	10/2/90	2	2.5	481138.11	1349580.59
Toxaphene	690	ug/kg	U	056558	10/2/90	4	4.5	481138.11	1349580.59
Toxaphene	680	ug/kg	U	056509	10/3/90	2	2.5	481137.29	1349541.06
Toxaphene	420	ug/kg	U	056899	11/2/90	2	2.5	481666.29	1349483.48
Toxaphene	410	ug/kg	U	056985	11/4/90	2	2.5	481587.71	1349680.95

APPENDIX C
EXISTING DATA ON STOCKPILE BPW-005

Parameter	Result	Units	Qual	Sample ID	Sample Date	Top Depth	Bottom Depth	Northing	Easting
Toxaphene	370	ug/kg	U	056982	11/4/90	0.5	1	481587.71	1349680.95
Toxaphene	370	ug/kg	U	056989	11/4/90	4	4.5	481587.71	1349680.95
Toxaphene	370	ug/kg	U	056580	9/24/90	4	4.5	481135.55	1349611.44
Toxaphene	370	ug/kg	U	056668	9/24/90	4	4.5	481107.94	1349670.73
Toxaphene	360	ug/kg	U	056661	9/24/90	0.5	1	481107.94	1349670.73
Toxaphene	210	ug/kg	U	056905	10/31/90	0.5	1	481621.03	1349517.53
Toxaphene	210	ug/kg	U	121674	7/13/93	1	1.5	481396.77	1349596.16
Toxaphene	200	ug/kg	U	056595	9/25/90	0.5	1	481133.83	1349644.52
Toxaphene	200	ug/kg	U	056908	11/1/90	2	2.5	481621.03	1349517.53
Toxaphene	200	ug/kg	U	057535	3/8/91	2	2.5	481216.91	1349510.38
Toxaphene	200	ug/kg	UNV	121679	7/13/93	2.5	3	481396.77	1349596.16
Toxaphene	200	ug/kg	U	056912	11/1/90	4	4.5	481621.03	1349517.53
Toxaphene	190	ug/kg	UJ	121670	7/13/93	0	0.5	481396.77	1349596.16
Toxaphene	190	ug/kg	U	056598	9/25/90	2	2.5	481133.83	1349644.52
Toxaphene	190	ug/kg	U	056513	10/3/90	4	4.5	481137.29	1349541.06
Toxaphene	190	ug/kg	U	056602	9/26/90	4	4.5	481133.83	1349644.52
Toxaphene	190	ug/kg	U	056536	9/23/90	4	4.5	481110.16	1349642.79
Toxaphene	190	ug/kg	U	057539	3/9/91	4	4.5	481216.91	1349510.38
Toxaphene	190	ug/kg	U	121685	7/13/93	4.5	5	481396.77	1349596.16
Toxaphene	190	ug/kg	U	057550	3/9/91	9.5	10	481216.91	1349510.38
Toxaphene	180	ug/kg	U	056896	11/2/90	0.5	1	481666.29	1349483.48
Toxaphene	180	ug/kg	U	056529	9/21/90	0.5	1	481110.16	1349642.79
Toxaphene	180	ug/kg	U	057532	3/8/91	0.5	1	481216.91	1349510.38
Toxaphene	180	ug/kg	U	056532	9/23/90	2	2.5	481110.16	1349642.79
Toxaphene	180	ug/kg	U	056613	9/26/90	9.5	10	481133.83	1349644.52
Toxaphene	180	ug/kg	U	056547	9/23/90	9.5	10	481110.16	1349642.79
Toxaphene	180	ug/kg	U	056679	9/25/90	9.5	10	481107.94	1349670.73
Toxaphene	180	ug/kg	U	057560	3/10/91	14.5	15	481216.91	1349510.38
Trichloroethene	50	ug/kg	U	12637-14-L	11/19/99	6.5	7	481630.47	1349670.84
Trichloroethene	50	ug/kg	U	12637-20-L	11/19/99	9.5	10	481630.47	1349670.84
Trichloroethene	45.4	ug/kg	U	12637-2-L	11/19/99	0.5	1	481630.47	1349670.84
Trichloroethene	38	ug/kg	UNV	12553-3B-L	10/20/99	1	1.5	481127.44	1349611.23
Trichloroethene	12	ug/kg	U	121674	7/13/93	1	1.5	481396.77	1349596.16

APPENDIX C
EXISTING DATA ON STOCKPILE BPW-005

Parameter	Result	Units	Qual	Sample ID	Sample Date	Top Depth	Bottom Depth	Northing	Easting
Trichloroethene	11	ug/kg	UJ	121670	7/13/93	0	0.5	481396.77	1349596.16
Trichloroethene	11	ug/kg	U	121679	7/13/93	2.5	3	481396.77	1349596.16
Trichloroethene	11	ug/kg	U	121685	7/13/93	4.5	5	481396.77	1349596.16
Trichloroethene	7	ug/kg	J	056899	11/2/90	2	2.5	481666.29	1349483.48
Trichloroethene	6	ug/kg	U	056905	10/31/90	0.5	1	481621.03	1349517.53
Trichloroethene	6	ug/kg	U	056484	9/27/90	0.5	1	481139.24	1349502.78
Trichloroethene	6	ug/kg	U	056595	9/25/90	0.5	1	481133.83	1349644.52
Trichloroethene	6	ug/kg	U	056529	9/21/90	0.5	1	481110.16	1349642.79
Trichloroethene	6	ug/kg	UJ	056982	11/4/90	0.5	1	481587.71	1349680.95
Trichloroethene	6	ug/kg	U	056908	11/1/90	2	2.5	481621.03	1349517.53
Trichloroethene	6	ug/kg	U	056487	10/2/90	2	2.5	481139.24	1349502.78
Trichloroethene	6	ug/kg	U	056598	9/25/90	2	2.5	481133.83	1349644.52
Trichloroethene	6	ug/kg	U	056532	9/23/90	2	2.5	481110.16	1349642.79
Trichloroethene	6	ug/kg	U	057535	3/8/91	2	2.5	481216.91	1349510.38
Trichloroethene	6	ug/kg	UJ	056985	11/4/90	2	2.5	481587.71	1349680.95
Trichloroethene	6	ug/kg	U	056912	11/1/90	4	4.5	481621.03	1349517.53
Trichloroethene	6	ug/kg	U	056989	11/4/90	4	4.5	481587.71	1349680.95
Trichloroethene	6	ug/kg	U	056491	10/2/90	4	4.5	481139.24	1349502.78
Trichloroethene	6	ug/kg	U	056580	9/24/90	4	4.5	481135.55	1349611.44
Trichloroethene	6	ug/kg	U	056602	9/26/90	4	4.5	481133.83	1349644.52
Trichloroethene	6	ug/kg	U	056668	9/24/90	4	4.5	481107.94	1349670.73
Trichloroethene	6	ug/kg	UJ	056536	9/23/90	4	4.5	481110.16	1349642.79
Trichloroethene	6	ug/kg	U	056502	10/2/90	9.5	10	481139.24	1349502.78
Trichloroethene	6	ug/kg	U	056547	9/23/90	9.5	10	481110.16	1349642.79
Trichloroethene	6	ug/kg	U	056679	9/25/90	9.5	10	481107.94	1349670.73
Trichloroethene	6	ug/kg	UJ	056569	10/2/90	9.5	10	481138.11	1349580.59
Trichloroethene	6	ug/kg	UJ	057550	3/9/91	9.5	10	481216.91	1349510.38
Trichloroethene	5	ug/kg	J	056896	11/2/90	0.5	1	481666.29	1349483.48
Trichloroethene	5	ug/kg	U	056551	9/27/90	0.5	1	481138.11	1349580.59
Trichloroethene	5	ug/kg	U	056661	9/24/90	0.5	1	481107.94	1349670.73
Trichloroethene	5	ug/kg	U	057532	3/8/91	0.5	1	481216.91	1349510.38
Trichloroethene	5	ug/kg	U	056576	9/24/90	2	2.5	481135.55	1349611.44
Trichloroethene	5	ug/kg	U	056664	9/24/90	2	2.5	481107.94	1349670.73

000112

3404

APPENDIX C
EXISTING DATA ON STOCKPILE BPW-005

Parameter	Result	Units	Qual	Sample ID	Sample Date	Top Depth	Bottom Depth	Northing	Easting
Trichloroethene	5	ug/kg	UJ	056554	10/2/90	2	2.5	481138.11	1349580.59
Trichloroethene	5	ug/kg	U	057539	3/9/91	4	4.5	481216.91	1349510.38
Trichloroethene	5	ug/kg	UJ	056558	10/2/90	4	4.5	481138.11	1349580.59
Trichloroethene	5	ug/kg	U	056591	9/25/90	9.5	10	481135.55	1349611.44
Trichloroethene	5	ug/kg	U	056613	9/26/90	9.5	10	481133.83	1349644.52
Trichloroethene	5	ug/kg	UJ	057560	3/10/91	14.5	15	481216.91	1349510.38
Trichloroethene	2.4	ug/kg	J	12637-8-L	11/19/99	3.5	4	481630.47	1349670.84
Trichloroethene	2	ug/kg	J	056903	11/2/90	4	4.5	481666.29	1349483.48
Uranium, Total	118.1	mg/kg	NV	055242	8/30/89	0	0.5	481429.62	1349710.06
Uranium, Total	77.5	mg/kg	-	000831	8/25/91			481138.11	1349580.59
Uranium, Total	40	mg/kg	J	050533	10/11/89	0	0.5	481333.31	1349371.45
Uranium, Total	35.6	mg/kg	-	121671	7/13/93	0	0.5	481396.77	1349596.16
Uranium, Total	31.8	mg/kg	J	056549	9/23/90			481110.16	1349642.79
Uranium, Total	24	mg/kg	NV	056859	9/23/90			481110.16	1349642.79
Uranium, Total	23	mg/kg	NV	019015	7/25/89	0	0.5	481436.4	1349493.13
Uranium, Total	23	mg/kg	NV	053665	7/17/89	16	16.5	481218.6	1349511.75
Uranium, Total	20.6	mg/kg	-	019257	1/17/90	0	0.5	481129.09	1349401.97
Uranium, Total	17.6	mg/kg	J	053665	7/17/89	16	16.5	481218.6	1349511.75
Uranium, Total	17	mg/kg	NV	019125	7/16/89	0	0.5	481218.6	1349511.75
Uranium, Total	12.5	mg/kg	NV	12548-7-M	10/6/99	3	3.5	481630.56	1349583.05
Uranium, Total	11	mg/kg	NV	119204	6/24/93	0	0.5	481228.5	1349308.34
Uranium, Total	11	mg/kg	NV	119207	6/24/93	2	2.5	481228.5	1349308.34
Uranium, Total	11	mg/kg	UNV	019019	7/25/89	2	2.5	481436.4	1349493.13
Uranium, Total	11	mg/kg	UNV	019129	7/16/89	2	2.5	481218.6	1349511.75
Uranium, Total	11	mg/kg	NV	119212	6/24/93	5	5.5	481228.5	1349308.34
Uranium, Total	11	mg/kg	UNV	019025	7/25/89	5	5.5	481436.4	1349493.13
Uranium, Total	11	mg/kg	UNV	019135	7/16/89	5	5.5	481218.6	1349511.75
Uranium, Total	11	mg/kg	NV	119218	6/24/93	10	10.5	481228.5	1349308.34
Uranium, Total	11	mg/kg	UNV	019036	7/25/89	10.5	11	481436.4	1349493.13
Uranium, Total	11	mg/kg	UNV	019146	7/17/89	10.5	11	481218.6	1349511.75
Uranium, Total	11	mg/kg	UNV	053663	7/17/89	15	15.5	481218.6	1349511.75
Uranium, Total	11	mg/kg	UNV	119226	6/24/93	15	15.5	481228.5	1349308.34
Uranium, Total	11	mg/kg	NV	056863	10/3/90			481139.24	1349502.78

000113

APPENDIX C
EXISTING DATA ON STOCKPILE BPW-005

Parameter	Result	Units	Qual	Sample ID	Sample Date	Top Depth	Bottom Depth	Northing	Easting
Uranium, Total	11	mg/kg	UNV	056864	10/3/90			481137.29	1349541.06
Uranium, Total	11	mg/kg	UNV	056865	10/2/90			481138.11	1349580.59
Uranium, Total	11	mg/kg	UNV	056860	9/25/90			481135.55	1349611.44
Uranium, Total	11	mg/kg	UNV	056862	9/26/90			481133.83	1349644.52
Uranium, Total	11	mg/kg	UNV	056861	9/25/90			481107.94	1349670.73
Uranium, Total	9.84	mg/kg	J	056504	10/3/90			481139.24	1349502.78
Uranium, Total	7.31	mg/kg	-	019267	1/17/90	5	5.5	481129.09	1349401.97
Uranium, Total	4.98	mg/kg	NV	055272	8/30/89	15	15.5	481429.62	1349710.06
Uranium, Total	4.96	mg/kg	J	056681	9/25/90			481107.94	1349670.73
Uranium, Total	4.75	mg/kg	J	056593	9/25/90			481135.55	1349611.44
Uranium, Total	4	mg/kg	UJ	050537	10/11/89	2	2.5	481333.31	1349371.45
Uranium, Total	4	mg/kg	J	050552	10/11/89	9.5	10	481333.31	1349371.45
Uranium, Total	3.99	mg/kg	NV	12600-1-M	10/7/99	0	0.5	481625.21	1349571.7
Uranium, Total	3.69	mg/kg	NV	055254	8/30/89	6	6.5	481429.62	1349710.06
Uranium, Total	3.65	mg/kg	NV	055262	8/30/89	10	10.5	481429.62	1349710.06
Uranium, Total	3.05	mg/kg	J	056526	10/3/90			481137.29	1349541.06
Uranium, Total	2.92	mg/kg	NV	055248	8/30/89	3	3.5	481429.62	1349710.06
Uranium, Total	2.9	mg/kg	-	121675	7/13/93	1	1.5	481396.77	1349596.16
Uranium, Total	2.78	mg/kg	J	056571	10/2/90			481138.11	1349580.59
Uranium, Total	2.6	mg/kg	-	121680	7/13/93	2.5	3	481396.77	1349596.16
Uranium, Total	2.4	mg/kg	-	121686	7/13/93	4.5	5	481396.77	1349596.16
Uranium, Total	1.66	mg/kg	NV	12600-11-M	10/7/99	5	5.5	481625.21	1349571.7
Uranium, Total	1.65	mg/kg	NV	12600-15-M	10/7/99	7	7.5	481625.21	1349571.7
Uranium, Total	1.52	mg/kg	NV	12548-15-M	10/6/99	7	7.5	481630.56	1349583.05
Uranium, Total	1.5	mg/kg	NV	12600-7-M	10/7/99	3	3.5	481625.21	1349571.7
Uranium, Total	1.43	mg/kg	NV	12548-13-M	10/6/99	6	6.5	481630.56	1349583.05
Uranium, Total	1.4	mg/kg	NV	12548-9-M	10/6/99	4	4.5	481630.56	1349583.05
Uranium, Total	1.36	mg/kg	NV	12600-5-M	10/7/99	2	2.5	481625.21	1349571.7
Uranium, Total	1.34	mg/kg	NV	12600-3-M	10/7/99	1	1.5	481625.21	1349571.7
Uranium, Total	1.26	mg/kg	NV	12600-9-M	10/7/99	4	4.5	481625.21	1349571.7
Uranium, Total	1.22	mg/kg	NV	12548-11-M	10/6/99	5	5.5	481630.56	1349583.05
Uranium, Total	1.22	mg/kg	NV	12600-13-M	10/7/99	6	6.5	481625.21	1349571.7
Vinyl chloride	50	ug/kg	U	12637-14-L	11/19/99	6.5	7	481630.47	1349670.84

000114

3404

APPENDIX C
EXISTING DATA ON STOCKPILE BPW-005

Parameter	Result	Units	Qual	Sample ID	Sample Date	Top Depth	Bottom Depth	Northing	Easting
Vinyl chloride	50	ug/kg	U	12637-20-L	11/19/99	9.5	10	481630.47	1349670.84
Vinyl chloride	45.4	ug/kg	U	12637-2-L	11/19/99	0.5	1	481630.47	1349670.84
Vinyl chloride	45.4	ug/kg	U	12637-8-L	11/19/99	3.5	4	481630.47	1349670.84
Vinyl chloride	38	ug/kg	UNV	12553-3B-L	10/20/99	1	1.5	481127.44	1349611.23
Vinyl chloride	13	ug/kg	UJ	056573	9/24/90	0.5	1	481135.55	1349611.44
Vinyl chloride	13	ug/kg	U	056899	11/2/90	2	2.5	481666.29	1349483.48
Vinyl chloride	12	ug/kg	U	056905	10/31/90	0.5	1	481621.03	1349517.53
Vinyl chloride	12	ug/kg	U	056484	9/27/90	0.5	1	481139.24	1349502.78
Vinyl chloride	12	ug/kg	U	056595	9/25/90	0.5	1	481133.83	1349644.52
Vinyl chloride	12	ug/kg	U	121674	7/13/93	1	1.5	481396.77	1349596.16
Vinyl chloride	12	ug/kg	U	056908	11/1/90	2	2.5	481621.03	1349517.53
Vinyl chloride	12	ug/kg	U	056487	10/2/90	2	2.5	481139.24	1349502.78
Vinyl chloride	12	ug/kg	U	057535	3/8/91	2	2.5	481216.91	1349510.38
Vinyl chloride	12	ug/kg	UJ	056985	11/4/90	2	2.5	481587.71	1349680.95
Vinyl chloride	12	ug/kg	U	056912	11/1/90	4	4.5	481621.03	1349517.53
Vinyl chloride	11	ug/kg	UJ	121670	7/13/93	0	0.5	481396.77	1349596.16
Vinyl chloride	11	ug/kg	U	056896	11/2/90	0.5	1	481666.29	1349483.48
Vinyl chloride	11	ug/kg	U	056551	9/27/90	0.5	1	481138.11	1349580.59
Vinyl chloride	11	ug/kg	U	056529	9/21/90	0.5	1	481110.16	1349642.79
Vinyl chloride	11	ug/kg	U	056661	9/24/90	0.5	1	481107.94	1349670.73
Vinyl chloride	11	ug/kg	U	057532	3/8/91	0.5	1	481216.91	1349510.38
Vinyl chloride	11	ug/kg	UJ	056982	11/4/90	0.5	1	481587.71	1349680.95
Vinyl chloride	11	ug/kg	U	056554	10/2/90	2	2.5	481138.11	1349580.59
Vinyl chloride	11	ug/kg	U	056576	9/24/90	2	2.5	481135.55	1349611.44
Vinyl chloride	11	ug/kg	U	056598	9/25/90	2	2.5	481133.83	1349644.52
Vinyl chloride	11	ug/kg	U	056532	9/23/90	2	2.5	481110.16	1349642.79
Vinyl chloride	11	ug/kg	U	056664	9/24/90	2	2.5	481107.94	1349670.73
Vinyl chloride	11	ug/kg	U	121679	7/13/93	2.5	3	481396.77	1349596.16
Vinyl chloride	11	ug/kg	U	056903	11/2/90	4	4.5	481666.29	1349483.48
Vinyl chloride	11	ug/kg	U	056989	11/4/90	4	4.5	481587.71	1349680.95
Vinyl chloride	11	ug/kg	U	056491	10/2/90	4	4.5	481139.24	1349502.78
Vinyl chloride	11	ug/kg	U	056558	10/2/90	4	4.5	481138.11	1349580.59
Vinyl chloride	11	ug/kg	U	056580	9/24/90	4	4.5	481135.55	1349611.44

APPENDIX C
EXISTING DATA ON STOCKPILE BPW-005

Parameter	Result	Units	Qual	Sample ID	Sample Date	Top Depth	Bottom Depth	Northing	Easting
Vinyl chloride	11	ug/kg	U	056602	9/26/90	4	4.5	481133.83	1349644.52
Vinyl chloride	11	ug/kg	U	056536	9/23/90	4	4.5	481110.16	1349642.79
Vinyl chloride	11	ug/kg	U	056668	9/24/90	4	4.5	481107.94	1349670.73
Vinyl chloride	11	ug/kg	U	057539	3/9/91	4	4.5	481216.91	1349510.38
Vinyl chloride	11	ug/kg	U	121685	7/13/93	4.5	5	481396.77	1349596.16
Vinyl chloride	11	ug/kg	U	056502	10/2/90	9.5	10	481139.24	1349502.78
Vinyl chloride	11	ug/kg	U	056569	10/2/90	9.5	10	481138.11	1349580.59
Vinyl chloride	11	ug/kg	U	056591	9/25/90	9.5	10	481135.55	1349611.44
Vinyl chloride	11	ug/kg	U	056613	9/26/90	9.5	10	481133.83	1349644.52
Vinyl chloride	11	ug/kg	U	056547	9/23/90	9.5	10	481110.16	1349642.79
Vinyl chloride	11	ug/kg	U	056679	9/25/90	9.5	10	481107.94	1349670.73
Vinyl chloride	11	ug/kg	UJ	057550	3/9/91	9.5	10	481216.91	1349510.38
Vinyl chloride	11	ug/kg	UJ	057560	3/10/91	14.5	15	481216.91	1349510.38
TCLP RESULTS									
1,1-Dichloroethene	50	ug/L	U	000830	8/25/91			481139.24	1349502.78
1,1-Dichloroethene	50	ug/L	U	000831	8/25/91			481138.11	1349580.59
1,1-Dichloroethene	5	ug/L	U	057571	3/9/91			481216.91	1349510.38
1,1-Dichloroethene	5	ug/L	UJ	056503	10/3/90			481139.24	1349502.78
1,1-Dichloroethene	5	ug/L	UJ	056570	10/2/90			481138.11	1349580.59
1,1-Dichloroethene	5	ug/L	UJ	056592	9/25/90			481135.55	1349611.44
1,1-Dichloroethene	5	ug/L	UJ	056614	9/26/90			481133.83	1349644.52
1,1-Dichloroethene	5	ug/L	UJ	056548	9/23/90			481110.16	1349642.79
1,1-Dichloroethene	5	ug/L	UJ	056680	9/25/90			481107.94	1349670.73
1,1-Dichloroethene	5	ug/L	UNV	057529	3/9/91			481212.2	1349591.6
1,2-Dichloroethane	50	ug/L	U	000830	8/25/91			481139.24	1349502.78
1,2-Dichloroethane	50	ug/L	U	000831	8/25/91			481138.11	1349580.59
1,2-Dichloroethane	5	ug/L	U	057571	3/9/91			481216.91	1349510.38
1,2-Dichloroethane	5	ug/L	UJ	056503	10/3/90			481139.24	1349502.78
1,2-Dichloroethane	5	ug/L	UJ	056570	10/2/90			481138.11	1349580.59
1,2-Dichloroethane	5	ug/L	UJ	056592	9/25/90			481135.55	1349611.44
1,2-Dichloroethane	5	ug/L	UJ	056614	9/26/90			481133.83	1349644.52
1,2-Dichloroethane	5	ug/L	UJ	056548	9/23/90			481110.16	1349642.79
1,2-Dichloroethane	5	ug/L	UJ	056680	9/25/90			481107.94	1349670.73

APPENDIX C
EXISTING DATA ON STOCKPILE BPW-005

Parameter	Result	Units	Qual	Sample ID	Sample Date	Top Depth	Bottom Depth	Northing	Easting
1,2-Dichloroethane	5	ug/L	UNV	057529	3/9/91			481212.2	1349591.6
1,4-Dichlorobenzene	40	ug/L	U	000830	8/25/91			481139.24	1349502.78
1,4-Dichlorobenzene	40	ug/L	U	000831	8/25/91			481138.11	1349580.59
1,4-Dichlorobenzene	20	ug/L	U	057571	3/9/91			481216.91	1349510.38
1,4-Dichlorobenzene	20	ug/L	UJ	056525	10/3/90			481137.29	1349541.06
1,4-Dichlorobenzene	20	ug/L	UJ	056592	9/25/90			481135.55	1349611.44
1,4-Dichlorobenzene	20	ug/L	UJ	056614	9/26/90			481133.83	1349644.52
1,4-Dichlorobenzene	20	ug/L	UJ	056548	9/23/90			481110.16	1349642.79
1,4-Dichlorobenzene	20	ug/L	UJ	056680	9/25/90			481107.94	1349670.73
1,4-Dichlorobenzene	20	ug/L	UNV	057529	3/9/91			481212.2	1349591.6
2,4,5-TP (Silvex)	17	ug/L	U	000830	8/25/91			481139.24	1349502.78
2,4,5-TP (Silvex)	17	ug/L	U	000831	8/25/91			481138.11	1349580.59
2,4,5-TP (Silvex)	1.9	ug/L	UJ	056525	10/3/90			481137.29	1349541.06
2,4,5-TP (Silvex)	1.8	ug/L	U	056503	10/3/90			481139.24	1349502.78
2,4,5-TP (Silvex)	1.8	ug/L	U	056570	10/2/90			481138.11	1349580.59
2,4,5-TP (Silvex)	1.8	ug/L	U	057571	3/9/91			481216.91	1349510.38
2,4,5-TP (Silvex)	1.8	ug/L	UJ	056592	9/25/90			481135.55	1349611.44
2,4,5-TP (Silvex)	1.8	ug/L	UNV	057529	3/9/91			481212.2	1349591.6
2,4,5-TP (Silvex)	1.7	ug/L	U	056614	9/26/90			481133.83	1349644.52
2,4,5-TP (Silvex)	1.7	ug/L	UJ	056548	9/23/90			481110.16	1349642.79
2,4,5-TP (Silvex)	1.7	ug/L	UJ	056680	9/25/90			481107.94	1349670.73
2,4,5-Trichlorophenol	100	ug/L	U	057571	3/9/91			481216.91	1349510.38
2,4,5-Trichlorophenol	100	ug/L	UJ	056525	10/3/90			481137.29	1349541.06
2,4,5-Trichlorophenol	100	ug/L	UJ	056592	9/25/90			481135.55	1349611.44
2,4,5-Trichlorophenol	100	ug/L	UJ	056614	9/26/90			481133.83	1349644.52
2,4,5-Trichlorophenol	100	ug/L	UJ	056548	9/23/90			481110.16	1349642.79
2,4,5-Trichlorophenol	100	ug/L	UJ	056680	9/25/90			481107.94	1349670.73
2,4,5-Trichlorophenol	100	ug/L	UNV	057529	3/9/91			481212.2	1349591.6
2,4,5-Trichlorophenol	40	ug/L	U	000830	8/25/91			481139.24	1349502.78
2,4,5-Trichlorophenol	40	ug/L	U	000831	8/25/91			481138.11	1349580.59
2,4,6-Trichlorophenol	40	ug/L	U	000830	8/25/91			481139.24	1349502.78
2,4,6-Trichlorophenol	40	ug/L	U	000831	8/25/91			481138.11	1349580.59
2,4,6-Trichlorophenol	20	ug/L	U	057571	3/9/91			481216.91	1349510.38

000117

APPENDIX C
EXISTING DATA ON STOCKPILE BPW-005

Parameter	Result	Units	Qual	Sample ID	Sample Date	Top Depth	Bottom Depth	Northing	Easting
2,4,6-Trichlorophenol	20	ug/L	UJ	056525	10/3/90			481137.29	1349541.06
2,4,6-Trichlorophenol	20	ug/L	UJ	056592	9/25/90			481135.55	1349611.44
2,4,6-Trichlorophenol	20	ug/L	UJ	056614	9/26/90			481133.83	1349644.52
2,4,6-Trichlorophenol	20	ug/L	UJ	056548	9/23/90			481110.16	1349642.79
2,4,6-Trichlorophenol	20	ug/L	UJ	056680	9/25/90			481107.94	1349670.73
2,4,6-Trichlorophenol	20	ug/L	UNV	057529	3/9/91			481212.2	1349591.6
2,4-D	120	ug/L	U	000830	8/25/91			481139.24	1349502.78
2,4-D	120	ug/L	U	000831	8/25/91			481138.11	1349580.59
2,4-D	13	ug/L	U	056570	10/2/90			481138.11	1349580.59
2,4-D	13	ug/L	UJ	056525	10/3/90			481137.29	1349541.06
2,4-D	12.3	ug/L	U	056614	9/26/90			481133.83	1349644.52
2,4-D	12.2	ug/L	UJ	056548	9/23/90			481110.16	1349642.79
2,4-D	12	ug/L	U	056503	10/3/90			481139.24	1349502.78
2,4-D	12	ug/L	U	057571	3/9/91			481216.91	1349510.38
2,4-D	12	ug/L	UJ	056592	9/25/90			481135.55	1349611.44
2,4-D	12	ug/L	UJ	056680	9/25/90			481107.94	1349670.73
2,4-D	12	ug/L	UNV	057529	3/9/91			481212.2	1349591.6
2,4-Dinitrotoluene	40	ug/L	U	000830	8/25/91			481139.24	1349502.78
2,4-Dinitrotoluene	40	ug/L	U	000831	8/25/91			481138.11	1349580.59
2,4-Dinitrotoluene	20	ug/L	UJ	056525	10/3/90			481137.29	1349541.06
2,4-Dinitrotoluene	20	ug/L	UJ	056592	9/25/90			481135.55	1349611.44
2,4-Dinitrotoluene	20	ug/L	UJ	056614	9/26/90			481133.83	1349644.52
2,4-Dinitrotoluene	20	ug/L	UJ	056548	9/23/90			481110.16	1349642.79
2,4-Dinitrotoluene	20	ug/L	UJ	056680	9/25/90			481107.94	1349670.73
2,4-Dinitrotoluene	20	ug/L	UJ	057571	3/9/91			481216.91	1349510.38
2,4-Dinitrotoluene	20	ug/L	UNV	057529	3/9/91			481212.2	1349591.6
2-Butanone	100	ug/L	U	000830	8/25/91			481139.24	1349502.78
2-Butanone	100	ug/L	U	000831	8/25/91			481138.11	1349580.59
2-Butanone	10	ug/L	U	056503	10/3/90			481139.24	1349502.78
2-Butanone	10	ug/L	UJ	056570	10/2/90			481138.11	1349580.59
2-Butanone	10	ug/L	UJ	056592	9/25/90			481135.55	1349611.44
2-Butanone	10	ug/L	UJ	056614	9/26/90			481133.83	1349644.52
2-Butanone	10	ug/L	UNV	057529	3/9/91			481212.2	1349591.6

000118

3404

APPENDIX C
EXISTING DATA ON STOCKPILE BPW-005

Parameter	Result	Units	Qual	Sample ID	Sample Date	Top Depth	Bottom Depth	Northing	Easting
2-Butanone	3	ug/L	U	056548	9/23/90			481110.16	1349642.79
2-Butanone	2	ug/L	U	056680	9/25/90			481107.94	1349670.73
alpha-Chlordane	0.5	ug/L	U	056503	10/3/90			481139.24	1349502.78
alpha-Chlordane	0.5	ug/L	U	056570	10/2/90			481138.11	1349580.59
alpha-Chlordane	0.5	ug/L	U	057571	3/9/91			481216.91	1349510.38
alpha-Chlordane	0.5	ug/L	UJ	056525	10/3/90			481137.29	1349541.06
alpha-Chlordane	0.5	ug/L	UJ	056592	9/25/90			481135.55	1349611.44
alpha-Chlordane	0.5	ug/L	UJ	056614	9/26/90			481133.83	1349644.52
alpha-Chlordane	0.5	ug/L	UJ	056548	9/23/90			481110.16	1349642.79
alpha-Chlordane	0.5	ug/L	UJ	056680	9/25/90			481107.94	1349670.73
alpha-Chlordane	0.5	ug/L	UNV	057529	3/9/91			481212.2	1349591.6
Arsenic	0.446	mg/L	-	057571	3/9/91			481216.91	1349510.38
Arsenic	0.325	mg/L	NV	057529	3/9/91			481212.2	1349591.6
Arsenic	0.25	mg/L	U	056525	10/3/90			481137.29	1349541.06
Arsenic	0.25	mg/L	U	056614	9/26/90			481133.83	1349644.52
Arsenic	0.25	mg/L	UJ	056592	9/25/90			481135.55	1349611.44
Arsenic	0.154	mg/L	U	056570	10/2/90			481138.11	1349580.59
Arsenic	0.1	mg/L	U	056503	10/3/90			481139.24	1349502.78
Arsenic	0.1	mg/L	U	056548	9/23/90			481110.16	1349642.79
Arsenic	0.0792	mg/L	U	056680	9/25/90			481107.94	1349670.73
Arsenic	0.047	mg/L	U	000830	8/25/91			481139.24	1349502.78
Arsenic	0.047	mg/L	U	000831	8/25/91			481138.11	1349580.59
Barium	1.26	mg/L	U	000830	8/25/91			481139.24	1349502.78
Barium	1.02	mg/L	J	056680	9/25/90			481107.94	1349670.73
Barium	0.958	mg/L	J	056592	9/25/90			481135.55	1349611.44
Barium	0.831	mg/L	-	057571	3/9/91			481216.91	1349510.38
Barium	0.783	mg/L	NV	057529	3/9/91			481212.2	1349591.6
Barium	0.763	mg/L	-	056614	9/26/90			481133.83	1349644.52
Barium	0.703	mg/L	-	056570	10/2/90			481138.11	1349580.59
Barium	0.646	mg/L	-	056503	10/3/90			481139.24	1349502.78
Barium	0.62	mg/L	U	000831	8/25/91			481138.11	1349580.59
Barium	0.572	mg/L	-	056548	9/23/90			481110.16	1349642.79
Barium	0.534	mg/L	-	056525	10/3/90			481137.29	1349541.06

APPENDIX C
EXISTING DATA ON STOCKPILE BPW-005

Parameter	Result	Units	Qual	Sample ID	Sample Date	Top Depth	Bottom Depth	Northing	Easting
Benzene	50	ug/L	U	000831	8/25/91			481138.11	1349580.59
Benzene	20	ug/L	U	000830	8/25/91			481139.24	1349502.78
Benzene	5	ug/L	U	057571	3/9/91			481216.91	1349510.38
Benzene	5	ug/L	UJ	056503	10/3/90			481139.24	1349502.78
Benzene	5	ug/L	UJ	056570	10/2/90			481138.11	1349580.59
Benzene	5	ug/L	UJ	056592	9/25/90			481135.55	1349611.44
Benzene	5	ug/L	UJ	056614	9/26/90			481133.83	1349644.52
Benzene	5	ug/L	UJ	056548	9/23/90			481110.16	1349642.79
Benzene	5	ug/L	UJ	056680	9/25/90			481107.94	1349670.73
Benzene	5	ug/L	UNV	057529	3/9/91			481212.2	1349591.6
Cadmium	0.0221	mg/L	-	056614	9/26/90			481133.83	1349644.52
Cadmium	0.018	mg/L	-	057571	3/9/91			481216.91	1349510.38
Cadmium	0.016	mg/L	NV	057529	3/9/91			481212.2	1349591.6
Cadmium	0.014	mg/L	-	056525	10/3/90			481137.29	1349541.06
Cadmium	0.0126	mg/L	J	056592	9/25/90			481135.55	1349611.44
Cadmium	0.0116	mg/L	-	056570	10/2/90			481138.11	1349580.59
Cadmium	0.00621	mg/L	-	056503	10/3/90			481139.24	1349502.78
Cadmium	0.00575	mg/L	J	056680	9/25/90			481107.94	1349670.73
Cadmium	0.00559	mg/L	-	056548	9/23/90			481110.16	1349642.79
Cadmium	0.004	mg/L	U	000830	8/25/91			481139.24	1349502.78
Cadmium	0.004	mg/L	U	000831	8/25/91			481138.11	1349580.59
Carbon Tetrachloride	50	ug/L	U	000830	8/25/91			481139.24	1349502.78
Carbon Tetrachloride	50	ug/L	U	000831	8/25/91			481138.11	1349580.59
Carbon Tetrachloride	5	ug/L	UJ	056503	10/3/90			481139.24	1349502.78
Carbon Tetrachloride	5	ug/L	UJ	056570	10/2/90			481138.11	1349580.59
Carbon Tetrachloride	5	ug/L	UJ	056592	9/25/90			481135.55	1349611.44
Carbon Tetrachloride	5	ug/L	UJ	056614	9/26/90			481133.83	1349644.52
Carbon Tetrachloride	5	ug/L	UJ	056548	9/23/90			481110.16	1349642.79
Carbon Tetrachloride	5	ug/L	UJ	056680	9/25/90			481107.94	1349670.73
Carbon Tetrachloride	5	ug/L	UJ	057571	3/9/91			481216.91	1349510.38
Carbon Tetrachloride	5	ug/L	UNV	057529	3/9/91			481212.2	1349591.6
Chlordane	1	ug/L	U	056503	10/3/90			481139.24	1349502.78
Chlordane	1	ug/L	U	056570	10/2/90			481138.11	1349580.59

APPENDIX C
EXISTING DATA ON STOCKPILE BPW-005

Parameter	Result	Units	Qual	Sample ID	Sample Date	Top Depth	Bottom Depth	Northing	Easting
Chlordane	1	ug/L	UJ	056525	10/3/90			481137.29	1349541.06
Chlordane	1	ug/L	UJ	056592	9/25/90			481135.55	1349611.44
Chlordane	1	ug/L	UJ	056614	9/26/90			481133.83	1349644.52
Chlordane	1	ug/L	UJ	056548	9/23/90			481110.16	1349642.79
Chlordane	1	ug/L	UJ	056680	9/25/90			481107.94	1349670.73
Chlordane	0.7	ug/L	U	000830	8/25/91			481139.24	1349502.78
Chlordane	0.7	ug/L	U	000831	8/25/91			481138.11	1349580.59
Chlorobenzene	50	ug/L	U	000830	8/25/91			481139.24	1349502.78
Chlorobenzene	50	ug/L	U	000831	8/25/91			481138.11	1349580.59
Chlorobenzene	5	ug/L	U	057571	3/9/91			481216.91	1349510.38
Chlorobenzene	5	ug/L	UJ	056503	10/3/90			481139.24	1349502.78
Chlorobenzene	5	ug/L	UJ	056570	10/2/90			481138.11	1349580.59
Chlorobenzene	5	ug/L	UJ	056592	9/25/90			481135.55	1349611.44
Chlorobenzene	5	ug/L	UJ	056614	9/26/90			481133.83	1349644.52
Chlorobenzene	5	ug/L	UJ	056548	9/23/90			481110.16	1349642.79
Chlorobenzene	5	ug/L	UJ	056680	9/25/90			481107.94	1349670.73
Chlorobenzene	5	ug/L	UNV	057529	3/9/91			481212.2	1349591.6
Chloroform	50	ug/L	U	000830	8/25/91			481139.24	1349502.78
Chloroform	50	ug/L	U	000831	8/25/91			481138.11	1349580.59
Chloroform	5	ug/L	U	057571	3/9/91			481216.91	1349510.38
Chloroform	5	ug/L	UJ	056503	10/3/90			481139.24	1349502.78
Chloroform	5	ug/L	UJ	056570	10/2/90			481138.11	1349580.59
Chloroform	5	ug/L	UJ	056592	9/25/90			481135.55	1349611.44
Chloroform	5	ug/L	UJ	056614	9/26/90			481133.83	1349644.52
Chloroform	5	ug/L	UJ	056548	9/23/90			481110.16	1349642.79
Chloroform	5	ug/L	UJ	056680	9/25/90			481107.94	1349670.73
Chloroform	5	ug/L	UNV	057529	3/9/91			481212.2	1349591.6
Chromium	0.124	mg/L	J	056592	9/25/90			481135.55	1349611.44
Chromium	0.102	mg/L	-	056614	9/26/90			481133.83	1349644.52
Chromium	0.096	mg/L	-	056525	10/3/90			481137.29	1349541.06
Chromium	0.079	mg/L	NV	057529	3/9/91			481212.2	1349591.6
Chromium	0.077	mg/L	-	057571	3/9/91			481216.91	1349510.38
Chromium	0.0474	mg/L	J	056680	9/25/90			481107.94	1349670.73

000121

APPENDIX C
EXISTING DATA ON STOCKPILE BPW-005

Parameter	Result	Units	Qual	Sample ID	Sample Date	Top Depth	Bottom Depth	Northing	Easting
Chromium	0.02	mg/L	U	056503	10/3/90			481139.24	1349502.78
Chromium	0.02	mg/L	U	056570	10/2/90			481138.11	1349580.59
Chromium	0.02	mg/L	U	056548	9/23/90			481110.16	1349642.79
Chromium	0.003	mg/L	U	000830	8/25/91			481139.24	1349502.78
Chromium	0.003	mg/L	U	000831	8/25/91			481138.11	1349580.59
Endrin	0.3	ug/L	U	000830	8/25/91			481139.24	1349502.78
Endrin	0.3	ug/L	U	000831	8/25/91			481138.11	1349580.59
Endrin	0.11	ug/L	UJ	056680	9/25/90			481107.94	1349670.73
Endrin	0.1	ug/L	U	056503	10/3/90			481139.24	1349502.78
Endrin	0.1	ug/L	U	056570	10/2/90			481138.11	1349580.59
Endrin	0.1	ug/L	U	057571	3/9/91			481216.91	1349510.38
Endrin	0.1	ug/L	UJ	056525	10/3/90			481137.29	1349541.06
Endrin	0.1	ug/L	UJ	056592	9/25/90			481135.55	1349611.44
Endrin	0.1	ug/L	UJ	056614	9/26/90			481133.83	1349644.52
Endrin	0.1	ug/L	UJ	056548	9/23/90			481110.16	1349642.79
Endrin	0.1	ug/L	UNV	057529	3/9/91			481212.2	1349591.6
gamma-BHC (Lindane)	0.2	ug/L	U	000830	8/25/91			481139.24	1349502.78
gamma-BHC (Lindane)	0.2	ug/L	U	000831	8/25/91			481138.11	1349580.59
gamma-BHC (Lindane)	0.075	ug/L	UJ	056680	9/25/90			481107.94	1349670.73
gamma-BHC (Lindane)	0.05	ug/L	U	056503	10/3/90			481139.24	1349502.78
gamma-BHC (Lindane)	0.05	ug/L	U	056570	10/2/90			481138.11	1349580.59
gamma-BHC (Lindane)	0.05	ug/L	U	057571	3/9/91			481216.91	1349510.38
gamma-BHC (Lindane)	0.05	ug/L	UJ	056525	10/3/90			481137.29	1349541.06
gamma-BHC (Lindane)	0.05	ug/L	UJ	056592	9/25/90			481135.55	1349611.44
gamma-BHC (Lindane)	0.05	ug/L	UJ	056614	9/26/90			481133.83	1349644.52
gamma-BHC (Lindane)	0.05	ug/L	UJ	056548	9/23/90			481110.16	1349642.79
gamma-BHC (Lindane)	0.05	ug/L	UNV	057529	3/9/91			481212.2	1349591.6
gamma-Chlordane	0.5	ug/L	U	056503	10/3/90			481139.24	1349502.78
gamma-Chlordane	0.5	ug/L	U	056570	10/2/90			481138.11	1349580.59
gamma-Chlordane	0.5	ug/L	U	057571	3/9/91			481216.91	1349510.38
gamma-Chlordane	0.5	ug/L	UJ	056525	10/3/90			481137.29	1349541.06
gamma-Chlordane	0.5	ug/L	UJ	056592	9/25/90			481135.55	1349611.44
gamma-Chlordane	0.5	ug/L	UJ	056614	9/26/90			481133.83	1349644.52

000122

3404

APPENDIX C
EXISTING DATA ON STOCKPILE BPW-005

Parameter	Result	Units	Qual	Sample ID	Sample Date	Top Depth	Bottom Depth	Northing	Easting
gamma-Chlordane	0.5	ug/L	UJ	056548	9/23/90			481110.16	1349642.79
gamma-Chlordane	0.5	ug/L	UJ	056680	9/25/90			481107.94	1349670.73
gamma-Chlordane	0.5	ug/L	UNV	057529	3/9/91			481212.2	1349591.6
Heptachlor	0.15	ug/L	U	000830	8/25/91			481139.24	1349502.78
Heptachlor	0.15	ug/L	U	000831	8/25/91			481138.11	1349580.59
Heptachlor	0.05	ug/L	U	056503	10/3/90			481139.24	1349502.78
Heptachlor	0.05	ug/L	U	056570	10/2/90			481138.11	1349580.59
Heptachlor	0.05	ug/L	U	057571	3/9/91			481216.91	1349510.38
Heptachlor	0.05	ug/L	UJ	056525	10/3/90			481137.29	1349541.06
Heptachlor	0.05	ug/L	UJ	056592	9/25/90			481135.55	1349611.44
Heptachlor	0.05	ug/L	UJ	056614	9/26/90			481133.83	1349644.52
Heptachlor	0.05	ug/L	UJ	056548	9/23/90			481110.16	1349642.79
Heptachlor	0.05	ug/L	UNV	057529	3/9/91			481212.2	1349591.6
Heptachlor	0.043	ug/L	UJ	056680	9/25/90			481107.94	1349670.73
Heptachlor epoxide	4.2	ug/L	U	000830	8/25/91			481139.24	1349502.78
Heptachlor epoxide	4.2	ug/L	U	000831	8/25/91			481138.11	1349580.59
Heptachlor epoxide	0.053	ug/L	UJ	056680	9/25/90			481107.94	1349670.73
Heptachlor epoxide	0.05	ug/L	U	056503	10/3/90			481139.24	1349502.78
Heptachlor epoxide	0.05	ug/L	U	056570	10/2/90			481138.11	1349580.59
Heptachlor epoxide	0.05	ug/L	U	057571	3/9/91			481216.91	1349510.38
Heptachlor epoxide	0.05	ug/L	UJ	056525	10/3/90			481137.29	1349541.06
Heptachlor epoxide	0.05	ug/L	UJ	056592	9/25/90			481135.55	1349611.44
Heptachlor epoxide	0.05	ug/L	UJ	056614	9/26/90			481133.83	1349644.52
Heptachlor epoxide	0.05	ug/L	UJ	056548	9/23/90			481110.16	1349642.79
Heptachlor epoxide	0.05	ug/L	UNV	057529	3/9/91			481212.2	1349591.6
Hexachlorobenzene	40	ug/L	U	000830	8/25/91			481139.24	1349502.78
Hexachlorobenzene	40	ug/L	U	000831	8/25/91			481138.11	1349580.59
Hexachlorobenzene	20	ug/L	U	057571	3/9/91			481216.91	1349510.38
Hexachlorobenzene	20	ug/L	UJ	056525	10/3/90			481137.29	1349541.06
Hexachlorobenzene	20	ug/L	UJ	056592	9/25/90			481135.55	1349611.44
Hexachlorobenzene	20	ug/L	UJ	056614	9/26/90			481133.83	1349644.52
Hexachlorobenzene	20	ug/L	UJ	056548	9/23/90			481110.16	1349642.79
Hexachlorobenzene	20	ug/L	UJ	056680	9/25/90			481107.94	1349670.73

APPENDIX C
EXISTING DATA ON STOCKPILE BPW-005

Parameter	Result	Units	Qual	Sample ID	Sample Date	Top Depth	Bottom Depth	Northing	Easting
Hexachlorobenzene	20	ug/L	UNV	057529	3/9/91			481212.2	1349591.6
Hexachlorobutadiene	40	ug/L	U	000830	8/25/91			481139.24	1349502.78
Hexachlorobutadiene	40	ug/L	U	000831	8/25/91			481138.11	1349580.59
Hexachlorobutadiene	20	ug/L	U	057571	3/9/91			481216.91	1349510.38
Hexachlorobutadiene	20	ug/L	UJ	056525	10/3/90			481137.29	1349541.06
Hexachlorobutadiene	20	ug/L	UJ	056592	9/25/90			481135.55	1349611.44
Hexachlorobutadiene	20	ug/L	UJ	056614	9/26/90			481133.83	1349644.52
Hexachlorobutadiene	20	ug/L	UJ	056548	9/23/90			481110.16	1349642.79
Hexachlorobutadiene	20	ug/L	UJ	056680	9/25/90			481107.94	1349670.73
Hexachlorobutadiene	20	ug/L	UNV	057529	3/9/91			481212.2	1349591.6
Hexachloroethane	40	ug/L	U	000830	8/25/91			481139.24	1349502.78
Hexachloroethane	40	ug/L	U	000831	8/25/91			481138.11	1349580.59
Hexachloroethane	20	ug/L	UJ	056525	10/3/90			481137.29	1349541.06
Hexachloroethane	20	ug/L	UJ	056592	9/25/90			481135.55	1349611.44
Hexachloroethane	20	ug/L	UJ	056614	9/26/90			481133.83	1349644.52
Hexachloroethane	20	ug/L	UJ	056548	9/23/90			481110.16	1349642.79
Hexachloroethane	20	ug/L	UJ	056680	9/25/90			481107.94	1349670.73
Hexachloroethane	20	ug/L	UJ	057571	3/9/91			481216.91	1349510.38
Hexachloroethane	20	ug/L	UNV	057529	3/9/91			481212.2	1349591.6
Lead	0.2	mg/L	U	056614	9/26/90			481133.83	1349644.52
Lead	0.2	mg/L	U	057571	3/9/91			481216.91	1349510.38
Lead	0.2	mg/L	UJ	056525	10/3/90			481137.29	1349541.06
Lead	0.2	mg/L	UJ	056592	9/25/90			481135.55	1349611.44
Lead	0.2	mg/L	UNV	057529	3/9/91			481212.2	1349591.6
Lead	0.08	mg/L	U	056503	10/3/90			481139.24	1349502.78
Lead	0.08	mg/L	U	056570	10/2/90			481138.11	1349580.59
Lead	0.08	mg/L	U	056548	9/23/90			481110.16	1349642.79
Lead	0.04	mg/L	UJ	056680	9/25/90			481107.94	1349670.73
Lead	0.038	mg/L	U	000830	8/25/91			481139.24	1349502.78
Lead	0.038	mg/L	U	000831	8/25/91			481138.11	1349580.59
Mercury	0.001	mg/L	UJ	000830	8/25/91			481139.24	1349502.78
Mercury	0.001	mg/L	UJ	000831	8/25/91			481138.11	1349580.59
Mercury	0.0002	mg/L	U	056503	10/3/90			481139.24	1349502.78

APPENDIX C
EXISTING DATA ON STOCKPILE BPW-005

Parameter	Result	Units	Qual	Sample ID	Sample Date	Top Depth	Bottom Depth	Northing	Easting
Mercury	0.0002	mg/L	U	056570	10/2/90			481138.11	1349580.59
Mercury	0.0002	mg/L	U	056592	9/25/90			481135.55	1349611.44
Mercury	0.0002	mg/L	U	056614	9/26/90			481133.83	1349644.52
Mercury	0.0002	mg/L	U	056548	9/23/90			481110.16	1349642.79
Mercury	0.0002	mg/L	U	056680	9/25/90			481107.94	1349670.73
Mercury	0.0002	mg/L	U	057571	3/9/91			481216.91	1349510.38
Mercury	0.0002	mg/L	UJ	056525	10/3/90			481137.29	1349541.06
Mercury	0.0002	mg/L	UNV	057529	3/9/91			481212.2	1349591.6
Methoxychlor	8.8	ug/L	U	000830	8/25/91			481139.24	1349502.78
Methoxychlor	8.8	ug/L	U	000831	8/25/91			481138.11	1349580.59
Methoxychlor	0.59	ug/L	UJ	056680	9/25/90			481107.94	1349670.73
Methoxychlor	0.5	ug/L	U	056503	10/3/90			481139.24	1349502.78
Methoxychlor	0.5	ug/L	U	056570	10/2/90			481138.11	1349580.59
Methoxychlor	0.5	ug/L	U	057571	3/9/91			481216.91	1349510.38
Methoxychlor	0.5	ug/L	UJ	056525	10/3/90			481137.29	1349541.06
Methoxychlor	0.5	ug/L	UJ	056592	9/25/90			481135.55	1349611.44
Methoxychlor	0.5	ug/L	UJ	056614	9/26/90			481133.83	1349644.52
Methoxychlor	0.5	ug/L	UJ	056548	9/23/90			481110.16	1349642.79
Methoxychlor	0.5	ug/L	UNV	057529	3/9/91			481212.2	1349591.6
Nitrobenzene	40	ug/L	U	000830	8/25/91			481139.24	1349502.78
Nitrobenzene	40	ug/L	U	000831	8/25/91			481138.11	1349580.59
Nitrobenzene	20	ug/L	U	057571	3/9/91			481216.91	1349510.38
Nitrobenzene	20	ug/L	UJ	056525	10/3/90			481137.29	1349541.06
Nitrobenzene	20	ug/L	UJ	056592	9/25/90			481135.55	1349611.44
Nitrobenzene	20	ug/L	UJ	056614	9/26/90			481133.83	1349644.52
Nitrobenzene	20	ug/L	UJ	056548	9/23/90			481110.16	1349642.79
Nitrobenzene	20	ug/L	UJ	056680	9/25/90			481107.94	1349670.73
Nitrobenzene	20	ug/L	UNV	057529	3/9/91			481212.2	1349591.6
Pentachlorophenol	200	ug/L	U	000830	8/25/91			481139.24	1349502.78
Pentachlorophenol	200	ug/L	U	000831	8/25/91			481138.11	1349580.59
Pentachlorophenol	100	ug/L	UJ	056525	10/3/90			481137.29	1349541.06
Pentachlorophenol	100	ug/L	UJ	056592	9/25/90			481135.55	1349611.44
Pentachlorophenol	100	ug/L	UJ	056614	9/26/90			481133.83	1349644.52

APPENDIX C
EXISTING DATA ON STOCKPILE BPW-005

Parameter	Result	Units	Qual	Sample ID	Sample Date	Top Depth	Bottom Depth	Northing	Easting
Pentachlorophenol	100	ug/L	UJ	056548	9/23/90			481110.16	1349642.79
Pentachlorophenol	100	ug/L	UJ	056680	9/25/90			481107.94	1349670.73
Pentachlorophenol	100	ug/L	UJ	057571	3/9/91			481216.91	1349510.38
Pentachlorophenol	100	ug/L	UNV	057529	3/9/91			481212.2	1349591.6
Pyridine	400	ug/L	U	000830	8/25/91			481139.24	1349502.78
Pyridine	400	ug/L	U	000831	8/25/91			481138.11	1349580.59
Pyridine	20	ug/L	UJ	056525	10/3/90			481137.29	1349541.06
Pyridine	20	ug/L	UJ	056592	9/25/90			481135.55	1349611.44
Pyridine	20	ug/L	UJ	056614	9/26/90			481133.83	1349644.52
Pyridine	20	ug/L	UJ	056548	9/23/90			481110.16	1349642.79
Pyridine	20	ug/L	UJ	056680	9/25/90			481107.94	1349670.73
Pyridine	20	ug/L	UJ	057571	3/9/91			481216.91	1349510.38
Pyridine	20	ug/L	UNV	057529	3/9/91			481212.2	1349591.6
Selenium	0.4	mg/L	U	056614	9/26/90			481133.83	1349644.52
Selenium	0.4	mg/L	U	057571	3/9/91			481216.91	1349510.38
Selenium	0.4	mg/L	UNV	057529	3/9/91			481212.2	1349591.6
Selenium	0.178	mg/L	-	056525	10/3/90			481137.29	1349541.06
Selenium	0.149	mg/L	U	056570	10/2/90			481138.11	1349580.59
Selenium	0.138	mg/L	U	056592	9/25/90			481135.55	1349611.44
Selenium	0.0848	mg/L	U	056503	10/3/90			481139.24	1349502.78
Selenium	0.0819	mg/L	-	056548	9/23/90			481110.16	1349642.79
Selenium	0.0803	mg/L	U	056680	9/25/90			481107.94	1349670.73
Selenium	0.066	mg/L	U	000830	8/25/91			481139.24	1349502.78
Selenium	0.066	mg/L	U	000831	8/25/91			481138.11	1349580.59
Silver	0.162	mg/L	NV	057529	3/9/91			481212.2	1349591.6
Silver	0.159	mg/L	-	057571	3/9/91			481216.91	1349510.38
Silver	0.0918	mg/L	J	056592	9/25/90			481135.55	1349611.44
Silver	0.073	mg/L	-	056525	10/3/90			481137.29	1349541.06
Silver	0.0608	mg/L	-	056614	9/26/90			481133.83	1349644.52
Silver	0.031	mg/L	J	056680	9/25/90			481107.94	1349670.73
Silver	0.02	mg/L	U	056503	10/3/90			481139.24	1349502.78
Silver	0.02	mg/L	U	056570	10/2/90			481138.11	1349580.59
Silver	0.02	mg/L	U	056548	9/23/90			481110.16	1349642.79

APPENDIX C
EXISTING DATA ON STOCKPILE BPW-005

Parameter	Result	Units	Qual	Sample ID	Sample Date	Top Depth	Bottom Depth	Northing	Easting
Silver	0.003	mg/L	U	000830	8/25/91			481139.24	1349502.78
Silver	0.003	mg/L	U	000831	8/25/91			481138.11	1349580.59
Tetrachloroethene	50	ug/L	U	000830	8/25/91			481139.24	1349502.78
Tetrachloroethene	50	ug/L	U	000831	8/25/91			481138.11	1349580.59
Tetrachloroethene	5	ug/L	UJ	056503	10/3/90			481139.24	1349502.78
Tetrachloroethene	5	ug/L	UJ	056570	10/2/90			481138.11	1349580.59
Tetrachloroethene	5	ug/L	UJ	056592	9/25/90			481135.55	1349611.44
Tetrachloroethene	5	ug/L	UJ	056614	9/26/90			481133.83	1349644.52
Tetrachloroethene	5	ug/L	UJ	056548	9/23/90			481110.16	1349642.79
Tetrachloroethene	5	ug/L	UJ	056680	9/25/90			481107.94	1349670.73
Tetrachloroethene	5	ug/L	UNV	057529	3/9/91			481212.2	1349591.6
Tetrachloroethene	1	ug/L	J	057571	3/9/91			481216.91	1349510.38
Toxaphene	12	ug/L	U	000830	8/25/91			481139.24	1349502.78
Toxaphene	12	ug/L	U	000831	8/25/91			481138.11	1349580.59
Toxaphene	1.2	ug/L	UJ	056680	9/25/90			481107.94	1349670.73
Toxaphene	1	ug/L	U	056503	10/3/90			481139.24	1349502.78
Toxaphene	1	ug/L	U	056570	10/2/90			481138.11	1349580.59
Toxaphene	1	ug/L	U	057571	3/9/91			481216.91	1349510.38
Toxaphene	1	ug/L	UJ	056525	10/3/90			481137.29	1349541.06
Toxaphene	1	ug/L	UJ	056592	9/25/90			481135.55	1349611.44
Toxaphene	1	ug/L	UJ	056614	9/26/90			481133.83	1349644.52
Toxaphene	1	ug/L	UJ	056548	9/23/90			481110.16	1349642.79
Toxaphene	1	ug/L	UNV	057529	3/9/91			481212.2	1349591.6
Trichloroethene	50	ug/L	U	000830	8/25/91			481139.24	1349502.78
Trichloroethene	50	ug/L	U	000831	8/25/91			481138.11	1349580.59
Trichloroethene	5	ug/L	UJ	056503	10/3/90			481139.24	1349502.78
Trichloroethene	5	ug/L	UJ	056570	10/2/90			481138.11	1349580.59
Trichloroethene	5	ug/L	UJ	056592	9/25/90			481135.55	1349611.44
Trichloroethene	5	ug/L	UJ	056614	9/26/90			481133.83	1349644.52
Trichloroethene	5	ug/L	UJ	056548	9/23/90			481110.16	1349642.79
Trichloroethene	5	ug/L	UJ	056680	9/25/90			481107.94	1349670.73
Trichloroethene	5	ug/L	UJ	057571	3/9/91			481216.91	1349510.38
Trichloroethene	5	ug/L	UNV	057529	3/9/91			481212.2	1349591.6

000127

APPENDIX C
EXISTING DATA ON STOCKPILE BPW-005

Parameter	Result	Units	Qual	Sample ID	Sample Date	Top Depth	Bottom Depth	Northing	Easting
Vinyl chloride	100	ug/L	U	000830	8/25/91			481139.24	1349502.78
Vinyl chloride	100	ug/L	U	000831	8/25/91			481138.11	1349580.59
Vinyl chloride	10	ug/L	U	057571	3/9/91			481216.91	1349510.38
Vinyl chloride	10	ug/L	UJ	056503	10/3/90			481139.24	1349502.78
Vinyl chloride	10	ug/L	UJ	056570	10/2/90			481138.11	1349580.59
Vinyl chloride	10	ug/L	UJ	056592	9/25/90			481135.55	1349611.44
Vinyl chloride	10	ug/L	UJ	056614	9/26/90			481133.83	1349644.52
Vinyl chloride	10	ug/L	UJ	056548	9/23/90			481110.16	1349642.79
Vinyl chloride	10	ug/L	UJ	056680	9/25/90			481107.94	1349670.73
Vinyl chloride	10	ug/L	UNV	057529	3/9/91			481212.2	1349591.6

000128

3404

APPENDIX D

PRIMARY/SECONDARY SOIL SAMPLES

TABLE D-1
HIS-008 PRIMARY RANDOM SAMPLE LOCATIONS

Sample ID	Northing	Easting	Estimated Boring Depth (feet)	Sample Depth Interval (feet)	TAL
HIS-008-1-R	481279	1350147	2.8	0.5-1.5	A
HIS-008-1-L	481279	1350147	2.8	0.5-1.5	C
HIS-008-1-S	481279	1350147	2.8	0.5-1.5	D
HIS-008-1-P	481279	1350147	2.8	0.5-1.5	E
HIS-008-1-TL	481279	1350147	2.8	0.5-1.5	F
HIS-008-1-TS	481279	1350147	2.8	0.5-1.5	G
HIS-008-1-TM	481279	1350147	2.8	0.5-1.5	H
HIS-008-2-R	481274	1350154	4.1	0-1.0	A
HIS-008-2-L	481274	1350154	4.1	0-1.0	C
HIS-008-2-S	481274	1350154	4.1	0-1.0	D
HIS-008-2-P	481274	1350154	4.1	0-1.0	E
HIS-008-2-TL	481274	1350154	4.1	0-1.0	F
HIS-008-2-TS	481274	1350154	4.1	0-1.0	G
HIS-008-2-TM	481274	1350154	4.1	0-1.0	H
HIS-008-3-R	481262	1350167	3.5	0.5-1.5	A
HIS-008-3-L	481262	1350167	3.5	0.5-1.5	C
HIS-008-3-S	481262	1350167	3.5	0.5-1.5	D
HIS-008-3-P	481262	1350167	3.5	0.5-1.5	E
HIS-008-3-TL	481262	1350167	3.5	0.5-1.5	F
HIS-008-3-TS	481262	1350167	3.5	0.5-1.5	G
HIS-008-3-TM	481262	1350167	3.5	0.5-1.5	H

TABLE D-2
HIS-008 SECONDARY RANDOM SAMPLE LOCATIONS

Sample ID	Northing	Easting	Estimated Boring Depth (feet)	Sample Depth Interval (feet)	TAL
HIS-008-1-R	481269	1350143	3.1	0.5-1.5	A
HIS-008-1-L	481269	1350143	3.1	0.5-1.5	C
HIS-008-1-S	481269	1350143	3.1	0.5-1.5	D
HIS-008-1-P	481269	1350143	3.1	0.5-1.5	E
HIS-008-1-TL	481269	1350143	3.1	0.5-1.5	F
HIS-008-1-TS	481269	1350143	3.1	0.5-1.5	G
HIS-008-1-TM	481269	1350143	3.1	0.5-1.5	H
HIS-008-2-R	481271	1350162	5.4	1.5-2.5	A
HIS-008-2-L	481271	1350162	5.4	1.5-2.5	C
HIS-008-2-S	481271	1350162	5.4	1.5-2.5	D
HIS-008-2-P	481271	1350162	5.4	1.5-2.5	E
HIS-008-2-TL	481271	1350162	5.4	1.5-2.5	F
HIS-008-2-TS	481271	1350162	5.4	1.5-2.5	G
HIS-008-2-TM	481271	1350162	5.4	1.5-2.5	H
HIS-008-3-R	481260	1350168	2.6	0.5-1.5	A
HIS-008-3-L	481260	1350168	2.6	0.5-1.5	C
HIS-008-3-S	481260	1350168	2.6	0.5-1.5	D
HIS-008-3-P	481260	1350168	2.6	0.5-1.5	E
HIS-008-3-TL	481260	1350168	2.6	0.5-1.5	F
HIS-008-3-TS	481260	1350168	2.6	0.5-1.5	G
HIS-008-3-TM	481260	1350168	2.6	0.5-1.5	H

TABLE D-3
A3A-006 PRIMARY RANDOM SAMPLE LOCATIONS

Sample ID	Northing	Easting	Estimated Boring Depth (feet)	Sample Depth Interval (feet)	TAL
A3A-006-1-R	482029	1349780	3.0	1.0-2.0	A
A3A-006-1-L	482029	1349780	3.0	1.0-2.0	C
A3A-006-1-S	482029	1349780	3.0	1.0-2.0	D
A3A-006-1-P	482029	1349780	3.0	1.0-2.0	E
A3A-006-1-TL	482029	1349780	3.0	1.0-2.0	F
A3A-006-1-TS	482029	1349780	3.0	1.0-2.0	G
A3A-006-1-TM	482029	1349780	3.0	1.0-2.0	H
A3A-006-2-R	482020	1349807	5.0	3.0-4.0	A
A3A-006-2-L	482020	1349807	5.0	3.0-4.0	C
A3A-006-2-S	482020	1349807	5.0	3.0-4.0	D
A3A-006-2-P	482020	1349807	5.0	3.0-4.0	E
A3A-006-2-TL	482020	1349807	5.0	3.0-4.0	F
A3A-006-2-TS	482020	1349807	5.0	3.0-4.0	G
A3A-006-2-TM	482020	1349807	5.0	3.0-4.0	H
A3A-006-3-R	482010	1349813	2.2	0-1.0	A
A3A-006-3-L	482010	1349813	2.2	0-1.0	C
A3A-006-3-S	482010	1349813	2.2	0-1.0	D
A3A-006-3-P	482010	1349813	2.2	0-1.0	E
A3A-006-3-TL	482010	1349813	2.2	0-1.0	F
A3A-006-3-TS	482010	1349813	2.2	0-1.0	G
A3A-006-3-TM	482010	1349813	2.2	0-1.0	H

TABLE D-4
A3A-006 SECONDARY RANDOM SAMPLE LOCATIONS

Sample ID	Northing	Easting	Estimated Boring Depth (feet)	Sample Depth Interval (feet)	TAL
A3A-006-1-R	482039	1349773	4.6	2.5-3.5	A
A3A-006-1-L	482039	1349773	4.6	2.5-3.5	C
A3A-006-1-S	482039	1349773	4.6	2.5-3.5	D
A3A-006-1-P	482039	1349773	4.6	2.5-3.5	E
A3A-006-1-TL	482039	1349773	4.6	2.5-3.5	F
A3A-006-1-TS	482039	1349773	4.6	2.5-3.5	G
A3A-006-1-TM	482039	1349773	4.6	2.5-3.5	H
A3A-006-2-R	482028	1349801	6.1	0-1.0	A
A3A-006-2-L	482028	1349801	6.1	0-1.0	C
A3A-006-2-S	482028	1349801	6.1	0-1.0	D
A3A-006-2-P	482028	1349801	6.1	0-1.0	E
A3A-006-2-TL	482028	1349801	6.1	0-1.0	F
A3A-006-2-TS	482028	1349801	6.1	0-1.0	G
A3A-006-2-TM	482028	1349801	6.1	0-1.0	H
A3A-006-3-R	482030	1349832	4.1	2.0-3.0	A
A3A-006-3-L	482030	1349832	4.1	2.0-3.0	C
A3A-006-3-S	482030	1349832	4.1	2.0-3.0	D
A3A-006-3-P	482030	1349832	4.1	2.0-3.0	E
A3A-006-3-TL	482030	1349832	4.1	2.0-3.0	F
A3A-006-3-TS	482030	1349832	4.1	2.0-3.0	G
A3A-006-3-TM	482030	1349832	4.1	2.0-3.0	H

TABLE D-5
BPW-005 PRIMARY RANDOM SAMPLE LOCATIONS

Sample ID	Northing	Easting	Estimated Boring Depth (feet)	Sample Depth Interval (feet)	TAL
BPW-005-1-R	481591	1349595	3.4	0.5-1.5	A
BPW-005-2-R	481587	1349621	6.9	3.5-4.5	A
BPW-005-3-R	481601	1349665	3.1	0-1.0	A
BPW-005-4-R	481569	1349660	5.7	2.5-3.5	A

TABLE D-6
BPW-005 SECONDARY RANDOM SAMPLE LOCATIONS

Sample ID	Northing	Easting	Estimated Boring Depth (feet)	Sample Depth Interval (feet)	TAL
BPW-005-1-R	481583	1349604	6.7	4.5-5.5	A
BPW-005-2-R	481589	1349627	3.4	0-1.0	A
BPW-005-3-R	481584	1349661	8.6	0-1.0	A
BPW-005-4-R	481564	1349667	5.7	3.5-4.5	A